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2001 Annual Report

The Air Pollution Control Program produces an annual report to provide Missouri residents information about the status of air quality in the state. The publication is made available here in electronic format. The publication is divided into chapters for quicker download.

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Air Pollution Control Program

Annual Report 2001



Missouri Department of Natural Resources
Air and Land Protection Division



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Introduction

Air is essential to the lives of all Missourians. Air surrounds our lives everywhere we go, at the grocery store, at work, even in bed sleeping. Because the quality of the air is so important to good health, the Department of Natural Resources' Air Pollution Control Program works diligently to keep the air clean and safe.

Protecting Missouri's air quality requires a cooperative effort by everyone. The Air Pollution Control Program works with Missouri residents, businesses and industry, and federal, state and local governments in order to protect and improve the air everyone breathes. Having everyone work together is important in helping maintain clean air.

Because protecting Missouri's air quality is a cooperative effort, the Air Pollution Control Program wants to keep everyone involved and informed. It is important that Missouri residents know how air pollution is created and how it affects their lives. The Air Pollution Control Program wants residents to understand what is being done in their state as well as what they can do in their lives to control air pollution.

This report is one method the Air Pollution Control Program uses to distribute information to Missouri residents. This report contains information about the health impact of air pollutants, describes the major types of air pollutants, the actions taken to control air quality and the major milestones in Missouri air quality in the past year.

More information on the bold faced terms throughout the report can also be found in the Glossary at the end of the report. After reading this report, if you have questions, please call the Air Pollution Control Program at 1-800-361-4827.

Missouri's air quality has improved over the past decade, and with everyone's cooperation, the Air Pollution Control Program will continue to improve the air you breathe.

Visit our Website at

www.dnr.state.mo.us/air.htm
for more information on:

- **Vehicle emissions testing;**
- **Regulations for businesses and industry;**
- **Publications;**
- **Open burning regulations;**
- **Current air quality in St. Louis and Kansas City;**
- **Operating Permits on Public Notice.**

As a recipient of federal funds, the Missouri Department of Natural Resources does not discriminate on the basis of race, color, religion, national origin, age, sex, or disability. Any person who believes he or she has suffered discrimination may file a complaint with the Department of Natural Resources or with the Office of Equal Opportunity, U.S. Department of the Interior, Washington, D.C., 20240.



2001 Air Quality Highlights

Ground-Level Ozone in St. Louis

Throughout the 2001 **ozone** season, only two **ozone exceedances** occurred in the St. Louis area. This represents an increase of one from the 2000 **ozone** season. The St. Louis area has a good opportunity to attain the **National Ambient Air Quality Standard (NAAQS)** for **ozone** in 2002.

St. Louis has implemented several control strategies in recent years to reduce ground-level **ozone**, including the use of a cleaner-burning **reformulated gasoline**. The Stage II vapor recovery program put special nozzles on all area gasoline pumps to catch fumes during re-fueling. The St. Louis community also launched a vehicle emissions inspection program, the Gateway Clean Air Program, in 2000.

St. Louis area residents made voluntary choices to help reduce **ozone**, such as carpooling, waiting to fill their cars up until after 5:30 p.m., taking the bus and avoiding the use of charcoal lighter fluid. For more information regarding ground-level **ozone** in St. Louis, see page 17.

Gateway Clean Air Program

The Gateway Clean Air Program entered its second year of operation as a primary part of Missouri's efforts to bring St. Louis into **attainment** with the U.S. Environmental Protection Agency's (EPA) **ozone** regulations. The program celebrated a milestone when it conducted its one millionth vehicle emissions test on Sept. 25, 2001. The program tests vehicles in St. Louis, St. Charles and Jefferson counties and in the city of St. Louis, using a new enhanced emissions testing procedure. Also, vehicle emissions testing entered the second year of operation in Franklin County,

using an improved basic idle emissions test.

More information about this program can be found in the Gateway Clean Air Program Annual Report and is available by visiting the following Web sites: gatewaycleanair.com, www.dnr.state.mo.us/alpd/apcp/gcap/ or www.cleanair-stlouis.com/gcap/.

Fuels

The Missouri Department of Natural Resources continues to develop methods for the St. Louis and Kansas City areas to reduce emissions of volatile organic compounds (VOCs) that contribute to the formation of ground-level **ozone**. St. Louis is required to reduce VOCs due to its status as an **ozone nonattainment area**, while the Kansas City reductions are contingency controls in response to violations of the federal health-based **ozone** standard in 1995 and 1997.

Stage II Vapor Recovery is one of the most effective means of reducing **ozone violations**. The department has developed the Missouri Performance Evaluation Test Procedures (MOPETP) to ensure that the Stage I and II vapor recovery equipment in the St. Louis **ozone nonattainment area** meet the mandatory 95 percent efficient requirement. The MOPETP is a comprehensive set of tests designed to determine the efficiency of gasoline vapor recovery systems and components. The department's Air Pollution Control Program approved a vapor recovery system called the Balance System. To date, nine different manufacturers of vapor recovery equipment have been tested and approved. These manufacturers hold MOPETP approvals for more than 100 components of the Balance System vapor recovery equipment.

As of Jan. 1, 2001, only MOPETP-approved systems and components are authorized for use in the St. Louis **ozone nonattainment area**. Auto manufacturers are in the process of conducting “Novel Facility” MOPETP testing to demonstrate these unique initial fueling facilities meet the efficient requirements.

An operating permits process is used to ensure that vapor recovery equipment continues to function properly after being installed. To date, all service stations in the St. Louis **ozone nonattainment area** have applied for and received an initial operating permit. The operating permit requires facilities to pass tests prior to receiving a renewed operating permit. Operating permits are renewed on a five-year cycle.

Federal **reformulated gasoline (RFG)** has been required at retail gasoline stations in the St. Louis **ozone nonattainment area** since June 1, 1999. Federal **RFG** is a gasoline formula designed to burn cleaner by adjusting the amount of various components already found in conventional gasoline. **RFG** is required all year, not just during the summer. It reduces exhaust emissions and evaporative emissions. **RFG** is administered and enforced by EPA. Phase II of the **RFG** program, which began Jan. 1, 2000, requires additional emission reductions compared to Phase I **RFG**. Phase II **RFG** requires a minimum of 25 percent VOC reductions, a 20 percent reduction in air toxins, and a five to seven percent reduction in **NO_x** emissions. Another important benefit of **RFG** is that it helps ensure the vehicles emission control equipment continues to perform well throughout the life of the vehicle.

In 2001, low Reid Vapor Pressure (RVP) gasoline was used during the summer months in the Kansas City **ozone** maintenance area. During

summer months, low RVP gasoline evaporates less than conventional gasoline, which reduces emissions of VOCs. Low RVP gasoline was first required in St. Louis in 1994 and in Kansas City in 1997. In early 2001, an amendment to lower the summer RVP requirement in Kansas City from 7.2 pounds per square inch (psi) to 7.0 psi beginning June 1, 2001, was adopted. The 7.0 psi RVP requirement will help Kansas City maintain compliance with the national **ozone** standard.

St. Louis Attainment Date Extension

The 1990 Amendments to the Clean Air Act set a deadline of Nov. 15, 1996, for complying with the **ozone** standard, but the U.S. Environmental Protection Agency (EPA) realized that some areas may be affected by air pollution transported from outside of **nonattainment areas**. In response to this realization, EPA allowed areas including St. Louis to apply for extensions to the **attainment** deadline. The St. Louis **nonattainment area** clearly demonstrated that emissions that came from outside the area were adversely impacting the air quality.

On June 26, 2001, EPA published a final rule in the Federal Register granting an **attainment** date extension for the St. Louis **ozone nonattainment area**. The St. Louis area retains its moderate **nonattainment** classification and has a new **attainment** deadline of Nov. 15, 2004. EPA determined that the plans submitted by Missouri and Illinois included sufficient control measures to demonstrate that the St. Louis area will reach the **national ambient air quality standard**.

With this **attainment** date extension, the area avoids reclassification to serious **nonattainment** status and more stringent construction permitting requirements. The extension allows the

area time to show that the air quality plan being implemented will achieve cleaner air.

Ozone Transport

Because some **nonattainment areas** are affected by air pollution from sources outside the area, initiatives involving the study of transported emissions and regional controls are becoming more common. In October 1998, EPA issued a rule, known as the **Oxides of Nitrogen (NO_x) State Implementation Plan (SIP) Call**. This **NO_x SIP Call** would have required Missouri to reduce emissions of **NO_x**, a commonly transported air pollutant that contributes to **ozone** formation. EPA's modeling indicated that the transport of pollutants from Missouri contributes to **ozone** problems in Illinois, Indiana, Michigan and Wisconsin. After several legal challenges, the EPA's **NO_x SIP Call** became effective for 19 of the 22 originally named states, excluding Missouri, Georgia and Wisconsin.

In 2000, the **Missouri Air Conservation Commission** adopted a statewide rule to reduce **NO_x** emissions. Missouri's statewide **NO_x** rule is intended to improve air quality in the St. Louis **ozone nonattainment area**. Missouri's statewide **NO_x** rule, 10 CSR 10-6.350, will reduce the emissions of **NO_x** from electric generating units and establish a **NO_x** emissions trading program for the entire state. Some facilities have started reducing their **NO_x** emissions ahead of schedule and have requested early reduction credits under the program.

EPA published a **NO_x SIP** call for Missouri on Feb. 22, 2002, in the Federal Register. At this time, Missouri is evaluating the current statewide **NO_x** regulation and the **NO_x SIP** call to determine what Missouri's response will be.



Emissions Banking and Trading

The department participated in the creation of an amendment to the Missouri Air Conservation Law, which mandates the development of an emissions banking and trading program for the **nonattainment** and maintenance areas in Missouri. This legislation became effective Aug. 28, 2001. It requires the **Missouri Air Conservation Commission** to adopt a rule that will establish a “Missouri Air Emissions Banking and Trading Program.”

The department is developing the rule through a workgroup process with interested parties, including facilities from the **nonattainment** and maintenance areas, environmental groups and EPA. The workgroup process began in October 2001 and is projected to be completed in April 2002. The department expects the final rule to be effective in March 2003.

Emissions banking and trading programs allow facilities to generate emission reduction credits (ERCs) by emitting below their applicable emission standard for a particular pollutant. The ERCs can be banked, traded or sold to a different facility.

These programs are helpful to facilities that are planning to expand an existing operation or build an additional facility in a **nonattainment** or maintenance area. These programs are also economically beneficial to facilities that consistently emit below their allowable levels.

This program should help Missouri maintain the **National Ambient Air Quality Standards** established by the Clean Air Act while fostering economic growth. As established in the law, an environmental contribution of three percent will be subtracted from the bank of credits each year to protect air quality.

CENRAP

The department's Air Pollution Control Program was a founding member of the Central States Regional Air Planning Association (CENRAP), an organization of states, tribes, and federal agencies. CENRAP is one of the five Regional Planning Organizations across the U.S. and includes the states and tribal areas of Nebraska, Kansas, Oklahoma, Texas, Minnesota, Iowa, Missouri, Arkansas and Louisiana. The organization was chartered to initiate and coordinate activities associated with the management of regional haze and other air quality transport issues involving the central states. CENRAP promotes the federal visibility rules through the coordination of science and technology to support air quality policy issues. CENRAP is developing a set of recommended strategies that its members may choose in their individual implementation programs, regulations and laws.

Cooperative Development of Regulations

Involving the public in the process of making air quality rules helps to create fair, effective regulations that have broad support. In 2001, the department continued its commitment to public participation by convening workgroups to help develop air regulations. A workgroup brings industry and the public together with government agencies to share concerns and exchange ideas while developing regulations.

The department worked with leaders from industry, environmental organizations and local governments to improve air quality in the Kansas City area. The department participated as a member of the Mid-America Regional Council in the development of an air quality improvement plan for the Kansas City **ozone** maintenance area. The Kansas City **ozone** maintenance area includes Johnson and Wyandotte counties in Kansas and

Clay, Jackson and Platte counties in Missouri.

The department actively participates in air quality meetings of the two major metropolitan planning organizations, East-West Gateway Coordinating Council in St. Louis and Mid-America Regional Council in Kansas City. At these public meetings, the department provides updates on air quality projects and discusses proposed rules and plans with other participants.

Permit Streamlining Workgroups

The department's Air Pollution Control Program participated in the Governor's Streamlining Efforts – Missouri Results Initiative. The issue addressed was permit efficiency in the construction and operating permit units. The mission of the Missouri Results Initiative was to reduce processing time by 80 percent.

The Missouri Results Initiative conducted two parallel workgroups within the Air Pollution Control Program, one for Construction Permits (CP) and one for Operating Permits (OP). The names of the workgroups are Managing For Results – CP and OP, respectively. The workgroups consisted of members from the Air Pollution Control Program, the department's regional offices, environmental groups and regulated industry. The primary goals were to improve the quality of air permits, decrease the number of complaints and issues, and improve turnaround time on issuing permits while continuing to improve and protect the air quality of Missouri.

The workgroups flowcharted the permitting processes and identified a target for the 80 percent reduction. The workgroups presented their recommendations to the department's management in February 2002.

Operating Permits

In 2001, the Operating Permit Unit progressed toward issuing all of the initial Part 70 State Installation Operating Permits. At year's end, 384 Part 70 Operating Permits, or 86 percent, had either completed the initial technical and peer review, had been issued or closed out. Permits that had undergone technical and peer review still need to be reviewed by the public and EPA. This process normally can be completed in two to three months, although routine objections received by the Air Pollution Control Program could delay this process.

Overall, the Operating Permit Unit completed 638 permitting actions. Those actions involved Part 70, Intermediate and Basic Operating Permit applications.

In 2001, the Air Pollution Control Program began posting drafts of operating permits on the program's Web site for public review. The documents remain on the Web throughout the public notice process, to enable citizens to have easier access to the documents. To view the operating permit drafts, visit <http://www.dnr.state.mo.us/alpd/apcp/PermitPublicNotices.htm>.

New Source Review Permits

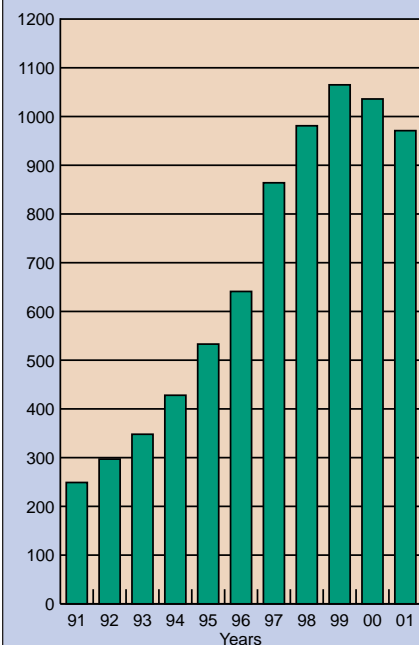
Among the 670 New Source Review permit actions completed in 2001, notable major level construction permits were issued for Ag Processing Inc., Associated Electric Cooperative Inc – Holden Power Plant and Panda Montgomery Power.

Also, the New Source Review Unit recently completed a significant project jointly with the Missouri Limestone Producer's Association. Together they developed an automated computer spreadsheet that allows the limestone quarry operators to quickly and efficiently determine the level of operations of their equipment at any particular site in Missouri that meets

or exceeds the air pollution control requirements. More information on the automated computer spreadsheet is available on page 8.

The draft construction permits may be found on the Program's Web site by visiting <http://www.dnr.state.mo.us/alpd/apcp/PermitPublicNotices.htm>

New Source Review Permits Issued by Air Pollution Control Program, 1991-2001



Initial Review Unit

In year 2001, the Initial Review Unit was created to implement one of the more significant Office of the State Auditor recommendations regarding reorganizing the functions of the New Source Review (NSR) Unit. The establishment of this unit will enhance the performance of Air Pollution Control Program permitting section by more effectively screening permit applications. The goal for the Initial Review Unit is to streamline both the construction and operating permit application process by screening out incomplete applications, reducing the frequency of applications that are put on hold to wait for additional information and improving customer service.



Enforcement Actions and Results

The department's Air Pollution Control Program performed 1,750 stationary source inspections in the 2001 calendar year. The program also issued 996 Notices of Violation (NOVs) in 2001. Settlements were reached in 213 cases. These settlements resulted in paid penalties totaling \$296,606 and suspended penalties totaling \$388,250. The department referred 22 cases to the Missouri Attorney General's Office.

Asbestos

Federal regulations require that all buildings must be inspected for the presence of asbestos-containing materials (ACM) before they are renovated or demolished. A Missouri-certified inspector must conduct the inspection. In most cases, ACM must be removed before beginning renovation or demolition. During 2001, the Air Pollution Control Program received notification of 1,126 regulated projects and conducted 498 inspections.

Owners or contractors of demolition or renovation operations must submit a notice of intent to demolish or renovate a structure to the department's Air Pollution Control Program 10 working days prior to start of operation for review and approval. Single family homes of four or fewer dwelling units are not subject to the regulations. However, when more than one residential structure is involved on the same city block per one-year period, or if the residential structure will be used for fire training, the regulations apply.

EPA Audit

In April 2001, EPA published an audit report that praised the Department of Natural Resources Air Pollution Control Program efforts and provided some helpful information to improve its processes.

The audit, conducted in July 2000, was part of the EPA Region 7's effort to review each state's air quality program once every four years. The Department of Natural Resources Air Pollution Control Program director consented to be the first state in EPA Region 7 to participate in the comprehensive review.

The audit outlined suggestions for the collection of emission inventory data. For example, EPA suggests that the information collected from industry include emission release point types. The different type of emission sources can vary greatly, such as stack emissions and fugitive dust emissions. The report recommends revising the emission inventory forms to collect all necessary information.

The audit reported that the department's Air Pollution Control Program is running a very competent permitting program. Unfortunately, high staff turnover makes this difficult. The audit recommends increasing staff salaries to ensure positions are competitive with the private sector. In addition, the audit suggested more outreach and education be provided to the regulated community regarding permitting requirements. According to EPA Region 7, this would reduce the number of sources constructing without a permit.

In regards to enforcement issues, the audit recommends that a penalty policy be developed to establish consistency and ensure fairness when assessing penalties against violators. The audit also recommends that the inspection forms be revised to contain more significant applicability requirements.

Regarding the program's planning efforts, EPA notes that the program has developed a Rulemaking Manual that provides all the necessary informa-

tion to draft, propose and finalize a new or revised rule. Developing this manual has resulted in a significant improvement in the quality and timeliness of rulemaking and in the submittal of **state implementation plans**.

The audit praised the department's new emissions inventory system, MoEIS. This system is designed to enable sources to enter information directly using the Internet. MoEIS is expected to reduce staff workload and minimize data entry errors.

The audit also commended the department's ability to coordinate with regional offices and local agencies. The audit noted that the relationship between these offices seemed to be "symbiotic and mutually beneficial."

The entire report is available online at www.dnr.state.mo.us/alpd/apcp/epasum2000.htm.

The Small Business Compliance Advisory Committee

Small businesses are often focused on their day-to-day operations and may find it difficult to keep up with changing air pollution regulations and requirements. Section 507 of the 1990 Federal Clean Air Act Amendments recognized this and required states to develop a three-component assistance program to help small businesses. The three components are a small business ombudsman, a technical assistance program for small businesses and a compliance advisory panel. In Missouri, the compliance advisory panel is known as the Small Business Compliance Advisory Committee.

The Small Business Compliance Advisory Committee is comprised of seven members. Two are appointed by the governor, one each is appointed by the majority and minority

leaders of the Missouri House and Senate, and one is appointed by the director of the Department of Natural Resources. The committee has the following responsibilities:

- Receive reports from the small business ombudsman (governor's office);
- Evaluate the impact of the Air Conservation Law and related regulations on small business;
- Make recommendations to the Department of Natural Resources, the **Missouri Air Conservation Commission** and the General Assembly regarding changes in procedure, rule or law that would help small businesses comply with the Air Conservation Law;
- Make recommendations to the **Missouri Air Conservation Commission** on rules to expedite the review of modifications for small business; and
- Conduct hearings and make investigations consistent with the purposes of the small business technical assistance activities.

Currently there are seven individuals serving on the committee that is chaired by Jack Lonsinger. Jack Lonsinger, Joel Braun, Dan Bunch and Doug Weible represent industry. Bruce Morrison and Caroline Pufalt represent the general public. Walter Pearson represents the Department of Natural Resources.

Small businesses face compliance issues in environmental areas other than air pollution. Steve Mahfood, Director of the Department of Natural Resources, asked the Small Business Compliance Advisory Committee to expand its scope to deal with these other issues. The Committee worked hard to become familiar with the other media this year, and dealt specifically with water permitting issues that very small slaughterhouses were having.

The small business technical assistance activity is performed by the Outreach and Assistance Center, a non-regulatory service of the Department of Natural Resources. Outreach and Assistance's business assistance unit carries out the activities and provides administrative support to the Small Business Compliance Advisory Committee. The mission of the department's Outreach and Assistance Center is to provide information, assistance, education and training to business owners, farmers, local governments and the general public on how to control or reduce pollution. For more information, contact the Outreach and Assistance Center at 1-800-361-4827 or (573) 526-6627.

Emissions Fees Workgroup

Members of the **Missouri Air Conservation Commission**, industry representatives and staff from the Air Pollution Control Program met during fall 2001 to review the cost of efforts to reduce air pollution in Missouri. Three meetings were held around the state in St. Louis, Kansas City, and Osage Beach, in conjunction with public meetings held by the **Missouri Air Conservation Commission**. This workgroup looked at whether the existing air emission fee was adequate to fund all the efforts needed to comply with the federal Clean Air Act. The conclusion of the workgroup was that an increase in the fee was needed to maintain existing air pollution control efforts in the state.

The next step in the process will be for the Air Pollution Control Program to propose a rule amendment to raise the air emission fee and submit the proposed rule to the **Missouri Air Conservation Commission** during the March 28, 2002 public hearing. The proposed rule is expected to raise the fee from \$25.70 to \$31 per ton of regulated air pollutant.

MISSOURI EMISSIONS INVENTORY SYSTEM

The Department of Natural Resources' Air Pollution Control Program has been working with Tier Technologies to develop the Missouri Emission Inventory System (MoEIS), an integrated emissions inventory system. By combining all emissions inventory data into one database, MoEIS ensures more accurate and efficient data. This new system will benefit both the Department of Natural Resources and industry.

Department staff will be able to access emissions data from one database instead of searching multiple systems. MoEIS will also reduce the staff time needed for data entry since the information will only need to be entered once. By reducing the number of times data must be entered, the number of errors will also be reduced. In addition, MoEIS automatically conducts quality checks on the data entered to help ensure the integrity of the data.

The new system can filter site information by various categories and break the information down into subgroups. These features will make it easier to respond to requests for specific data. MoEIS was also developed using common formats, which makes data sharing easier, especially when transferring data to EPA. In fact, EPA praised the first inventory sent by the department using MoEIS.

When the current development phase is complete, MoEIS will greatly reduce the reporting burden placed on industry by allowing electronic submittal of Emissions Inventory Questionnaires (EIQs). The electronic EIQs should also save industry significant time when submitting data. Instead of having to enter the same information on multiple forms, MoEIS will automatically transfer the information from one form to another. Data will also be able to be transferred from one year to the next. The online system is available 24

hours a day, until a company submits their information for the reporting period.

MoEIS has gone through three phases of development. In 1999, the department began the construction of the emissions inventory system by combining the four existing systems into one integrated system. This new system combined over 7,000 Paradox tables and Access databases. The second phase was the evaluation of software for creating the online application of MoEIS. The department, with the help of Tier Technologies, evaluated three Web development tools in order to find the best selection to fit their needs. The third and current phase of the project is the development of a Web portal that will allow the regulated community to submit their EIQs online.

MoEIS is designed to allow for further expansion in the future. Additional components can be added to accommodate other functions. The Air Pollution Control Program hopes to continue the development of the system to allow online permit applications and fee payments. MoEIS is the department's first effort into electronic government and Government-to-Business transactions.

ELECTRONIC PERMIT APPLICATION

The Department of Natural Resources' Air Pollution Control Program, working with the Missouri Limestone Producers Association and Trinity Consultants, has created an electronic New Source Review Permit Application/Permit Review Program for stone quarrying and crushing plants. The electronic permits will be issued more quickly, consistently and with less cost.

The electronic application is based on a Microsoft Excel spreadsheet. Applicants enter information about haul roads, storage piles and process equipment. The software calculates the am-

bient impact and emissions. This allows the applicant to know if the permit can be issued as submitted beforehand and if so what conditions would apply. The Air Pollution Control Program will assure the proper data was entered and the software was used correctly.

Applicants can also use the software to help make business decisions before applying for their permit. The spreadsheet can analyze various operating scenarios and their effects on air quality thus allowing the applicant to tailor the proposed plant to the property.

"To the best of our knowledge, this is the first electronic application that also performs ambient dispersion modeling and ambient impact analysis and therefore lets the applicants make decisions before submitting their application," said Roger Randolph, Director of the Air Pollution Control Program.

The electronic permit will also shorten the time it takes to issue a stone quarrying and processing plant permit. By receiving complete applications, the time it takes for staff to review a permit before issuing will decrease significantly while increasing the consistency of the permits and protecting the air quality. The electronic permit will also greatly reduce paperwork since applications will be submitted on disk instead of on paper, which then has to be transferred into the spreadsheet.

The stone quarrying electronic permit application was approved on May 31, 2001. The application includes instructions for installing the software, a workbook with instructions on how to complete the data files, a user's guide, department policies related to the permitting process, and an example project.

For information about how to receive an electronic permit application, call the Department of Natural Resources' Environmental Assistance Office, formally known as the Technical Assistance Program, at 1-800-361-4827 or visit <http://www.dnr.state.mo.us/oac>.

Major Air Pollutants

The measurements for air quality in Missouri are the National Ambient (outdoor) Air Quality Standards established by EPA under the Clean Air Act. The standards address six “criteria pollutants” considered harmful to public health and the environment: ozone, lead, inhalable particles, carbon monoxide, nitrogen dioxide and sulfur dioxide. These standards are found on page 11.

Ozone

Ground-level **ozone** is a colorless gas, the most harmful part is sometimes call “smog.” **Ozone** is not directly emitted. It forms on hot, stagnant summer days when sunlight causes a reaction between volatile organic compounds (VOC) and **nitrogen oxides** (NO_x). Vehicles, power plants and industrial boilers are common sources of NO_x . Gasoline-powered vehicles and manufacturing operations are major sources of VOCs.

There are two types of **ozone**: stratospheric (upper atmosphere) and ground-level **ozone**. **Ozone** in the stratosphere occurs naturally and is desirable, shielding the earth from harmful ultraviolet rays. **Ozone** at the ground level irritates the respiratory system, causing congestion, chest pains, nausea and labored breathing. It also aggravates existing lung and heart conditions such as asthma.

Airborne Lead

In Missouri, airborne **lead** and its compounds are produced mainly by **lead smelters**. Airborne **lead** poses the greatest danger to children under age six, therefore the standard has been established to protect their health. In 1985, 73 percent of airborne

lead came from vehicle exhaust pipes. By 1988, it decreased to 34 percent due to federal controls on gasoline that started in the mid-1970s.

Inhalable Particles

Inhalable particles include airborne dust, pollen, soot and aerosol sprays. Scientists also refer to these as “particulate matter.” Current federal standards apply to particles less than 10 microns in diameter, or PM_{10} , emitted mainly by vehicles, industry and farms. Wind and rainfall cause seasonal variations in PM_{10} . In 1997, EPA set new standards for even smaller particles less than 2.5 microns in diameter, or $\text{PM}_{2.5}$.

Carbon Monoxide

Carbon monoxide (CO), formed by the incomplete combustion of fuel, is one of the most common pollutants. More than 75 percent of CO emissions come from vehicle exhaust. The highest concentrations are caused by heavy traffic in metropolitan areas. Though deadly, CO changes quickly to carbon dioxide, which is not dangerous.

Nitrogen Dioxide

Almost all **nitrogen dioxide** (NO_x) is man-made. When fuel is burned above 1200 degrees Fahrenheit, **nitrogen dioxide** can form. Principal sources of **nitrogen dioxide** include power plants, industrial boilers and vehicles.

Sulfur Dioxide

Sulfur oxides form through the burning of fuels that contain sulfur, such as coal and oil, by **smelting** metals and by other industrial processes. **Sulfur dioxide** (SO_2) composes about 95 percent of these gases.

Other Air Pollutants

In addition to the six criteria pollutants, the Department of Natural Resources’ Air Pollution Control Program also regulates other pollutants, including asbestos and hazardous air pollutants.

Asbestos

Asbestos is a naturally occurring mineral that takes the form of hollow microscopic fibers. Before being identified as a cancer-causing agent, asbestos was widely used for insulation and fireproofing. With age, it breaks down and becomes a hazard to anyone who breathes its airborne fibers. Federal and state laws regulate the removal of asbestos from buildings and the Department of Natural Resources monitors these activities.

Hazardous Air Pollutants (HAPS)

Some air pollutants can cause quick and painful death, cancer, reproductive disorders and environmental damage such as acid rain. EPA has designated these pollutants as hazardous air pollutants. These pollutants may present a hazard to public health and safety if released in sufficient quantity.



Clean Air Standards

The Clean Air Act established two types of national air quality standards, primary and secondary. Primary standards set limits to protect public health, including the health of “sensitive” populations such as children, the elderly and those with respiratory illnesses. Secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation and buildings.

New Standards

In 1997, EPA established new health-based standards for ground-level **ozone** and **fine particulate matter**. Extensive scientific review showed that the changes to the standards were necessary to protect public health and the environment. However, the new standards were challenged in court. In May 1999, the U.S. Court of Appeals for the District of Columbia Circuit declared that the new standards were not enforceable. EPA appealed this decision to the U.S. Supreme Court. The Supreme Court decision upheld the new EPA standards, although it ordered EPA to revise its **ozone** implementation strategy. It also required EPA to continue to implement the previous **ozone** and particulate matter standards.

Fine Particulate Matter: $PM_{2.5}$ versus PM_{10}

In revising the air quality standards, EPA created new standards for **$PM_{2.5}$** (fine particulate matter less than 2.5

microns in diameter). EPA’s scientific review concluded that fine particles (**$PM_{2.5}$**) that penetrate deeply into the lungs, are more damaging to human health than the coarse particles known as **PM_{10}** . Fine particles are more likely than coarse particles to contribute to such health effects as premature death, increased hospital admissions and emergency visits, especially for the elderly and individuals with cardiopulmonary disease. However, coarse particles can accumulate in the respiratory system and aggravate health problems such as asthma, and the standards for **PM_{10}** particles are retained.

Air Quality Monitors in Missouri

In 2001, the Missouri Air Pollution Monitoring Network included 111 monitors of three types: national monitors, state and local agency monitors and special-purpose monitors. National monitors have been established to provide data on national trends. State and local agencies operate permanent monitors to measure ambient concentrations of those pollutants for which **National Ambient Air Quality Standards** have been set. Special-purpose monitors are placed to gather representative data as well as worst-case occurrences. Data is also being collected at 44 meteorological monitors operating throughout the state. The data collected at these monitors is used for analysis and modeling purposes.

National Ambient Air Quality Standards

CRITERIA AIR POLLUTANT	AVERAGING TIME	PRIMARY STANDARD	SECONDARY STANDARD	HEALTH EFFECTS
Carbon Monoxide	Eight-hour maximum ^a	9 ppm (10 mg/m ³)	None	Impaired vision and manual dexterity, weakness and mental dullness. At high levels: vomiting, fast pulse and breathing, followed by slow pulse and breathing, then collapse and unconsciousness.
	One-hour maximum ^a	35 ppm ^b (40 mg/m ³) ^c	None	
Lead	Maximum Quarterly Arithmetic Mean	1.5 µg/m ³	Same As Primary Standard	Low doses damage the central nervous system of children and unborn infants, causing seizures, mental retardation and behavioral disorders. In children and adults lead causes fatigue, disturbed sleep, decreased fitness and damage to kidneys, liver and blood-forming organs. High levels damage the nervous system and cause seizures, coma and death.
Nitrogen Dioxide	Annual Arithmetic Mean	0.05 ppm (100 µg/m ³)	Same As Primary Standard	Lung inflammation and lower resistance to infections like bronchitis and pneumonia. Suspected of causing acute respiratory diseases in children.
Ozone	One-hour average ^a	0.12 ppm (235 µg/m ³)	Same As Primary Standard	Throat irritation, congestion, chest pains, nausea and labored breathing. Aggravation of existing lung or heart conditions, allergies and asthma. Ozone is especially harmful to those who work or play outside. Ozone is also harmful to plant life, damaging forests and reducing crop yields.
Particulate Matter (PM₁₀)	Annual Arithmetic Mean	50 µg/m ³	Same As Primary Standard	Increased likelihood of chronic or acute respiratory illness. Difficulty breathing, aggravation of existing respiratory or cardiovascular illness and lung damage.
	24-hour average ^f	150 µg/m ³		
Sulfur Dioxide	Annual Arithmetic Mean	0.03 ppm (80 µg/m ³)	0.5 ppm (1300 µg/m ³)	Irritation of throat and lungs with difficulty in breathing. Aggravation of existing respiratory or cardiovascular illness.
	24-hour maximum ^a	0.14 ppm (365 µg/m ³)		
	Three-hour maximum ^a			

a Not to be exceeded more than once a year for primary and secondary standards.

b mg/m³ = milligrams per cubic meter.

c Established for a three year average of the fourth highest daily maximum value.

d ppm = part per million.

e mg/m³ = micrograms per cubic meter.

f No more than one expected exceedance, three year average.

Air Quality Monitoring Sites in Missouri

ENVIRONMENTAL SERVICES PROGRAM

SITE	SITE NAME
01	South 759 Hwy St Joseph
02	St. Joseph Levee
03	12th and Mitchell St Joseph
04	El Dorado Springs
05	Watkins Mill State Park
06	Hwy 33 & County Home Liberty
07	North Kansas City
08	Sugar Creek
09	Mercer County
10	Mountain View
11	DRG Hogan
12	DRG Dunn
13	DRG Tindell
14	DRG Hogan Mountain
15	Carthage Stone
16	DRH Dunklin High School Herculaneum
17	Arnold Tenbrook & Tenbrook
18	DRH SO2 Herculaneum
19	Festus
20	Lincoln South
21	Lincoln North
22	Mark Twain State Park
23	Hwy 94 West Alton
24	Orchard Farm
25	Bonne Terre
26	Ste Genevieve

KANSAS CITY AIR QUALITY

SITE	SITE NAME
27	2600 NE Parvin Rd
28	49th & Winchester WOF
29	724 Troost
30	27th & Van Brunt
31	Richards Gebaur South
32	4928 Main Street
33	800 Broadway
34	1517 Locust
35	11500 North 71 Hwy KCI

SPRINGFIELD-GREENE COUNTY APC

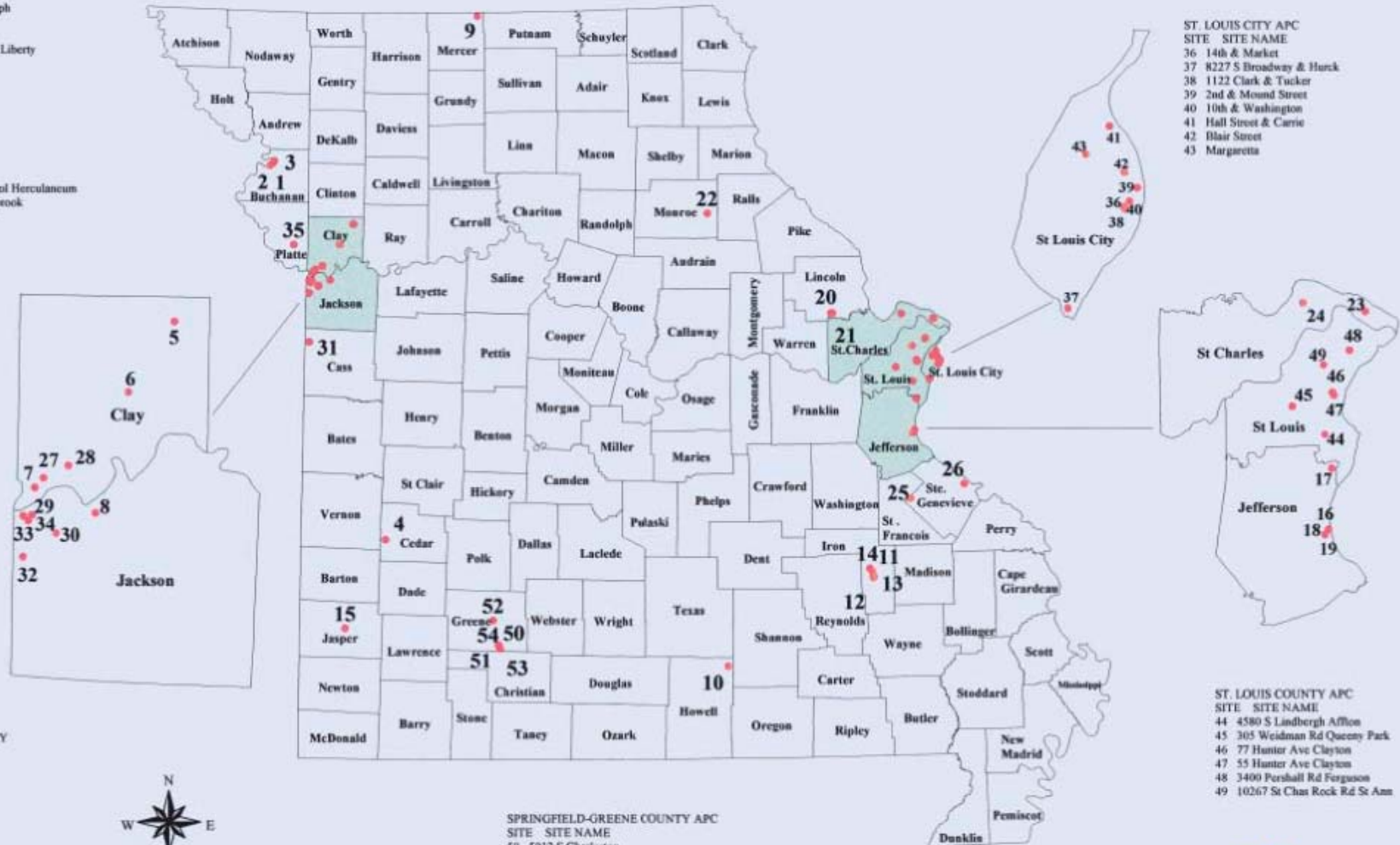
SITE	SITE NAME
50	5012 S Charleston
51	Southwest MO State
52	Hillcrest School
53	James River South
54	1555 S Glenstone

ST. LOUIS CITY APC

SITE	SITE NAME
36	14th & Market
37	8227 S Broadway & Hurck
38	1122 Clark & Tucker
39	2nd & Mound Street
40	10th & Washington
41	Hall Street & Carrie
42	Blair Street
43	Margaretta

ST. LOUIS COUNTY APC

SITE	SITE NAME
44	4580 S Lindbergh Afflon
45	305 Weidman Rd Queeny Park
46	77 Hunter Ave Clayton
47	55 Hunter Ave Clayton
48	3400 Pershall Rd Ferguson
49	10267 St Char Rock Rd St Ann



Missouri's Air Quality

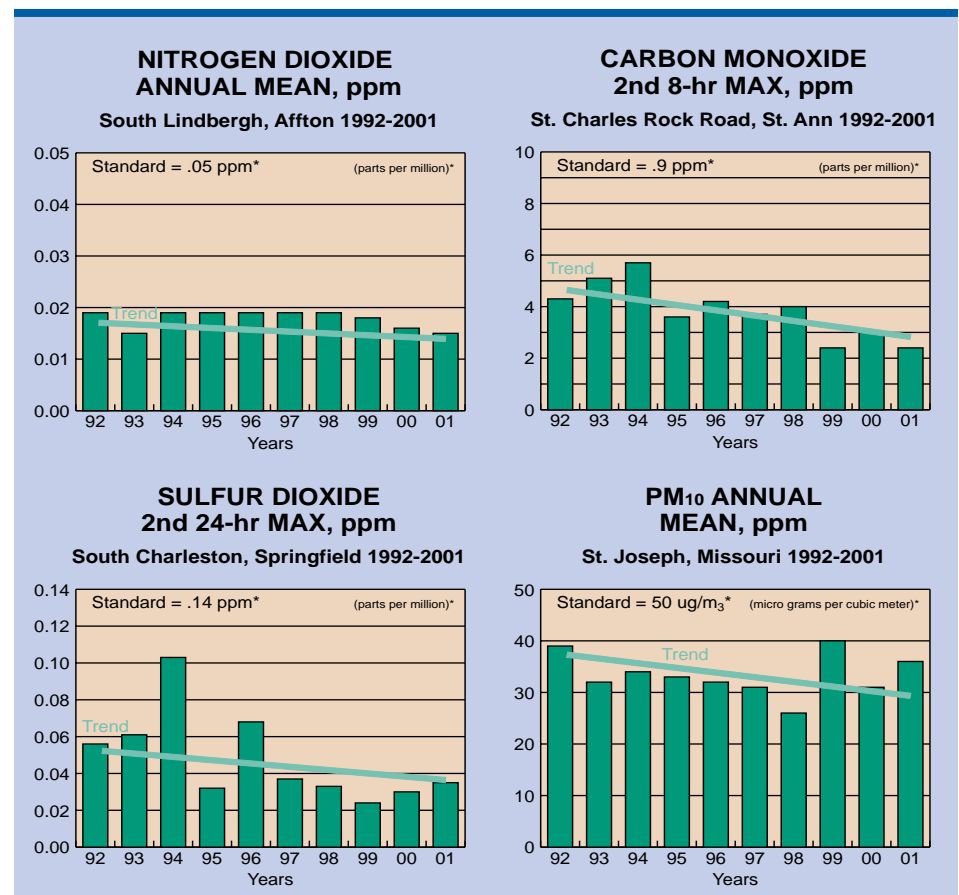
The air quality in Missouri meets EPA's accepted levels, except for two specific areas. During the summer months, the St. Louis area has repeatedly exceeded the ozone standard and is designated by EPA as a moderate-level "nonattainment area" for ozone. This area includes the city of St. Louis and Franklin, Jefferson, St. Charles and St. Louis counties (see page 17), as well as Madison, Monroe and St. Clair counties in Illinois. A small area near a lead smelter in Jefferson County still exceeds federal standards for airborne lead (see page 22).

Air Quality Trends

The department monitors air concentrations of the six criteria pollutants at selected locations throughout the state. Most areas of the state are in **attainment** of the air quality standards.

The graphs below are representative of general trends of ambient air data from four pollutants including CO, NO_x, SO_x and PM₁₀. See Major Air Pollutants on page 11 for more information on sources of these pollutants and their health effects. The overall trend as shown by the four graphs below is improved air quality.

Air Quality Trends at Selected Locations



Emission Trends

In 1999, Missouri expanded its emission inventory submittal to EPA to add area and mobile sources to the point source information. Area sources are the smaller businesses and local and regional activities such as pesticide applications, highway painting and open burning. On-Road mobile sources encompass passenger and commercial vehicles, while off-road mobile sources include construction equipment, motorized recreation vehicles and small machines like lawnmowers.

The graphs at the right show the total emissions of the criteria pollutants

that Missouri facilities reported for the years 1993 to 2000. As reflected in the graphs, facilities have generally reported decreased emissions. Since 1993, facilities have reduced **PM₁₀** emissions 57 percent, while VOC emissions have dropped 42 percent. **Sulfur oxide** emissions dropped 46 percent since 1993. Industries have also reported a 26 percent decline in the emission of **NO_x** since 1993.

NO_x emissions are expected to continue to decline between now and 2007. EPA's **NO_x State Implementation Plan (SIP)** call will require a reduction in **NO_x** emissions of approxi-

mately 35 percent from the eastern one-third of Missouri. Missouri has a statewide **NO_x** rule that will achieve slightly more emission reductions from electrical generating units in the entire state. The tables below show relative contributions from major industrial sources.

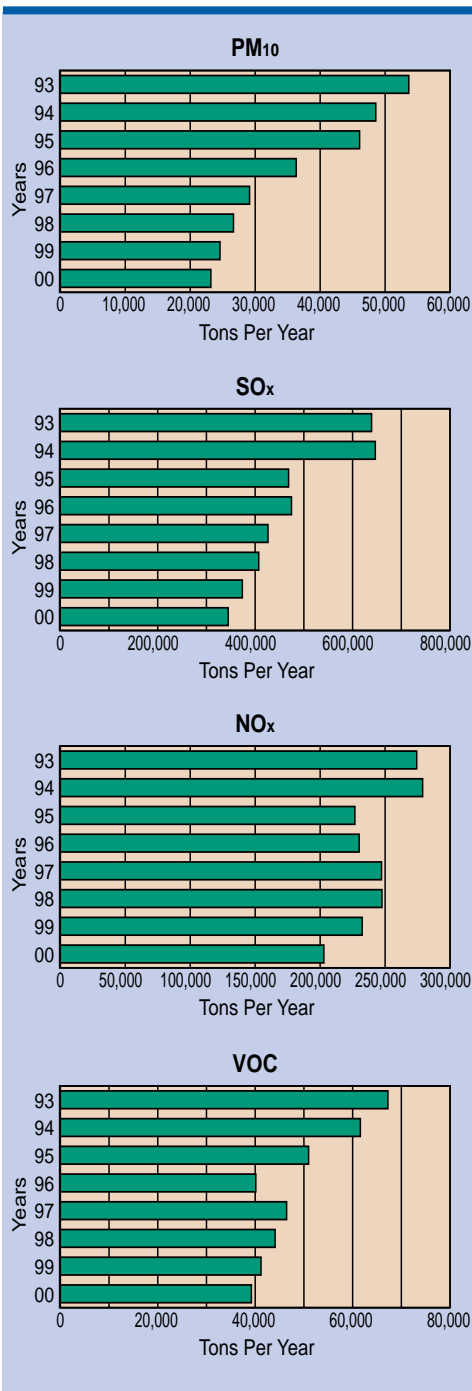
Annual Reported Emissions

Top Point Emission Sources for NO _x	Tons of NO _x contributed by these sources in 2000	Percent of total
(1) Electricity Generation	163,432.45	80.6%
(2) Cement Production	16,355.26	8.1%
(3) Lime and Limestone Production	3850.10	1.9%
(4) Natural Gas	3265.18	1.6%
(5) Pipeline	2106.75	1.0%
(6) All Others	13,878.99	6.8%
Total:	202,888.72	

Top Point Emission Sources for PM ₁₀	Tons of PM ₁₀ contributed by these sources in 2000	Percent of total
(1) Electricity Generation	4,718.87	20.4%
(2) Lime and Limestone Production	3,536.55	15.3%
(3) Charcoal Production	3,091.76	13.4%
(4) Cement Production	2,826.67	12.2%
(5) Aluminum	718.75	3.1%
(6) Concrete	591.55	2.6%
(7) Fertilizer Manufacturing	519.94	2.2%
(8) All Others	7,139.38	30.8%
Total:	23,143.46	

Top Point Emission Sources for VOCs	Tons of VOCs contributed by these sources in 2000	Percent of total
(1) Charcoal Production	7,171.76	18.3%
(2) Automobile Production	5,065.53	12.9%
(3) Aluminum	3,008.44	7.7%
(4) Cement Production	2,090.62	5.3%
(5) Plastics Production	2,052.32	5.2%
(6) Electricity Generation	1,593.53	4.1%
(7) Metal Can Production	901.32	2.3%
(8) Printing	808.33	2.1%
(9) Soybean Processing	785.39	2.0%
(10) All Others	15,747.03	40.1%
Total:	39,224.28	

Top Point Emission Sources for SO _x	Tons of SO _x contributed by these sources in 2000	Percent of total
(1) Electricity Generation	248,505.16	72.1%
(2) Lead Refinery	57,521.49	16.7%
(3) Cement Production	11,769.25	3.4%
(4) Beer Production	6,292.80	1.8%
(5) Lime and Limestone Production	5,315.15	1.5%
(6) Chemicals	4,376.10	1.3%
(7) Aluminum	3,750.19	1.1%
(8) All Others	7,363.89	2.1%
Total:	344,894.03	



Air Quality Index: Ozone

Index Values	Levels of Health Concern	Cautionary Statements
0-50	Good	None
51-100*	Moderate	Unusually sensitive people should consider limiting prolonged outdoor exertion.
101-150	Unhealthy for sensitive groups	Active children and adults, and people with respiratory disease, such as asthma, should limit prolonged outdoor exertion.
151-200	Unhealthy	Active children and adults, and people with respiratory disease, such as asthma, should avoid prolonged outdoor exertion; everyone else, especially children, should limit prolonged outdoor exertion.
201-300	Very unhealthy	Active children and adults, and people with respiratory disease such as asthma, should avoid all outdoor exertion; everyone else, especially children, should limit outdoor exertion.
301-500	Hazardous	Everyone should avoid all outdoor exertion.

* Generally, an AQI of 100 for ozone corresponds to an ozone level of 0.08 parts per million (averaged over 8 hours).

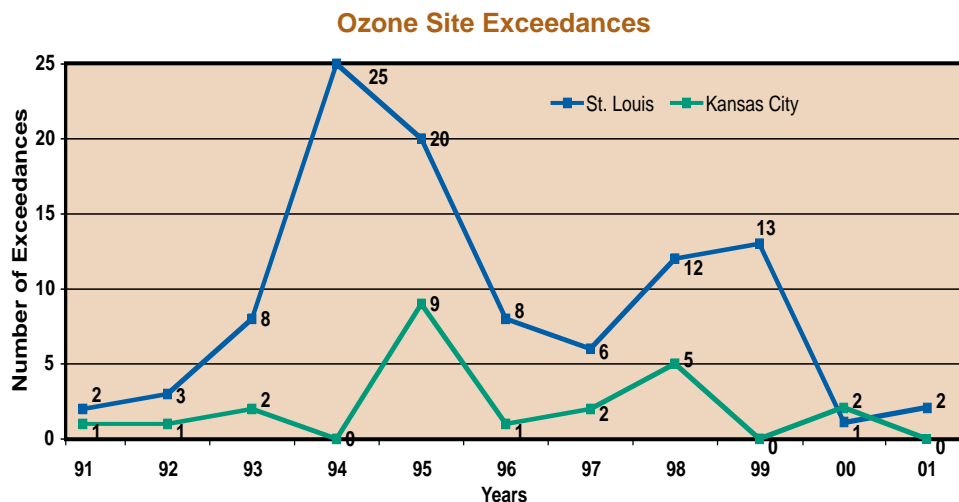
Ozone in Missouri

Naturally occurring ozone in the upper atmosphere protects the earth from the sun's harmful rays. Ground-level ozone is an irritant that damages lung tissue and aggravates respiratory disease. The pollutant is formed when heat and sunlight mix with VOC and nitrogen oxides in the lower atmosphere. Ozone can trigger a variety of health problems. Those most susceptible to ozone include children, the elderly and individuals with pre-existing respiratory problems. Even healthy young adults may experience respiratory problems at ozone levels as low as .08 parts-per-million (ppm) if they remain outdoors for extended periods. This could include individuals whose jobs require a great deal of time outdoors, such as road construction workers, or even individuals working in their lawns or gardens. The table at the left describes the Air Quality Index (AQI), a system used to warn communities in St. Louis and Kansas City on days when the air may be dangerous to breathe. During the ozone season, between April 1 and October 31, many radio and television stations in the St. Louis and

Kansas City areas provide AQI information on a daily basis.

Number of Ozone Site Exceedances Reported

In 2001, the St. Louis **ozone nonattainment area** reported two **exceedances** of the one-hour **ozone** standard. Kansas City reported no **exceedances**. The graph below shows the number of days St. Louis and Kansas City exceeded the ground-level **ozone** standard in the last decade. The graph at the right shows the number of days the St. Louis area exceeded the ground-level **ozone** standard in comparison to the number of days weather conditions were favorable for exceeding this standard. This graph reflects the importance of individual actions in controlling **ozone**. In recent years, weather conditions have been favorable to the formation of high levels of **ozone** in the St. Louis area on several days. However, through carpooling, postponing mowing, avoiding use of charcoal lighter fluid and many other voluntary efforts, St. Louis area residents were able to prevent high **ozone** levels on many of those days.

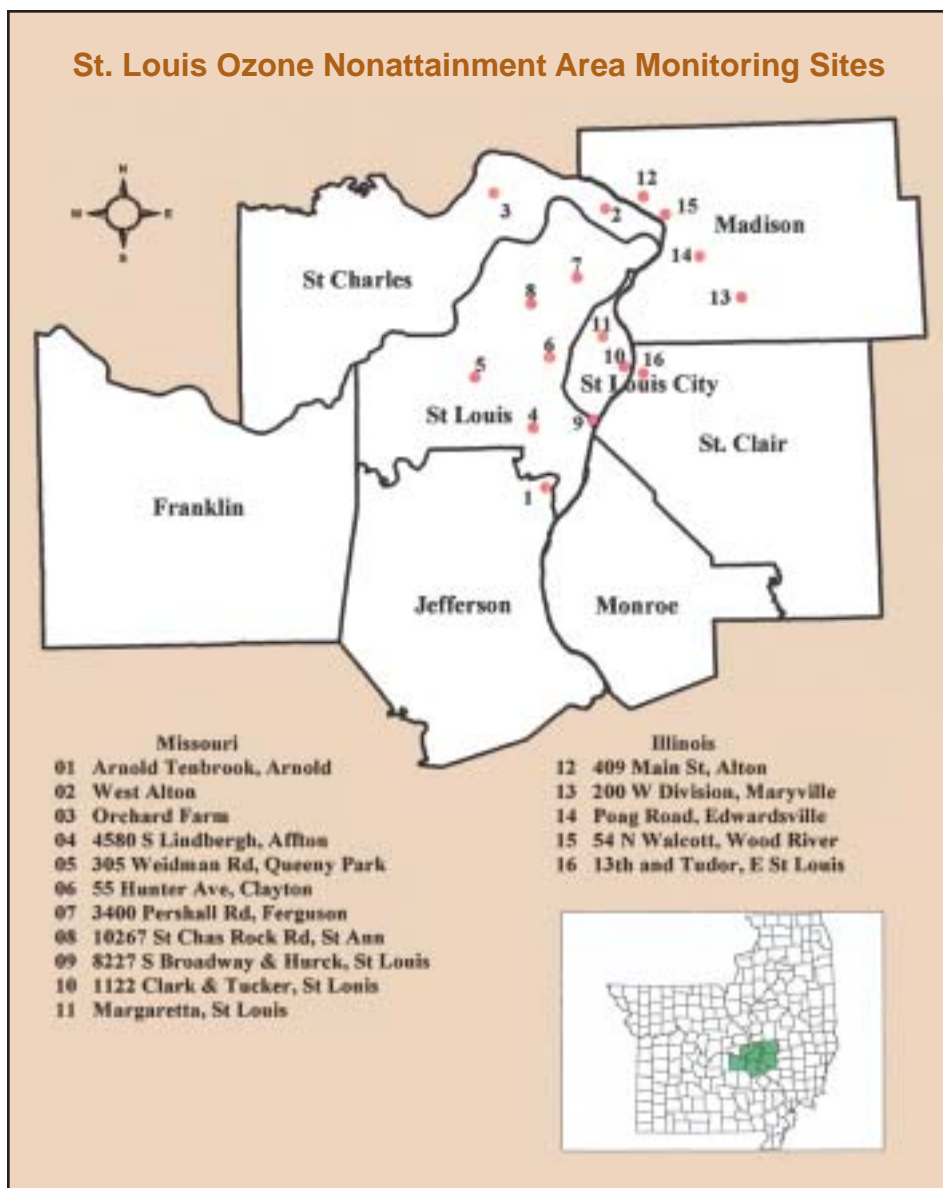


OZONE IN ST. LOUIS

It is considered a violation, when four or more exceedances of the one-hour health-based standard for ozone occur at the same monitor in a three-year period. When a violation occurs, the area is designated as nonattainment. Nonattainment areas are then divided into five classifications based on the severity of the exceedances that occurred at the monitor in a three-year period: marginal, moderate, serious, severe and extreme. Under the Clean Air Act, EPA has designated many areas in the country as nonattainment for ozone. In 1999, the St. Louis ozone nonattainment area was one of five areas nationwide classified as a “moderate” ozone nonattainment area.

The St. Louis **ozone nonattainment area** includes the city of St. Louis, and the counties of St. Charles, St. Louis, Jefferson and Franklin in Missouri and Madison, Monroe and St. Clair counties in Illinois. The map at the right shows the sites for air monitors in the **ozone nonattainment area**.

St. Louis Ozone Nonattainment Area Monitoring Sites

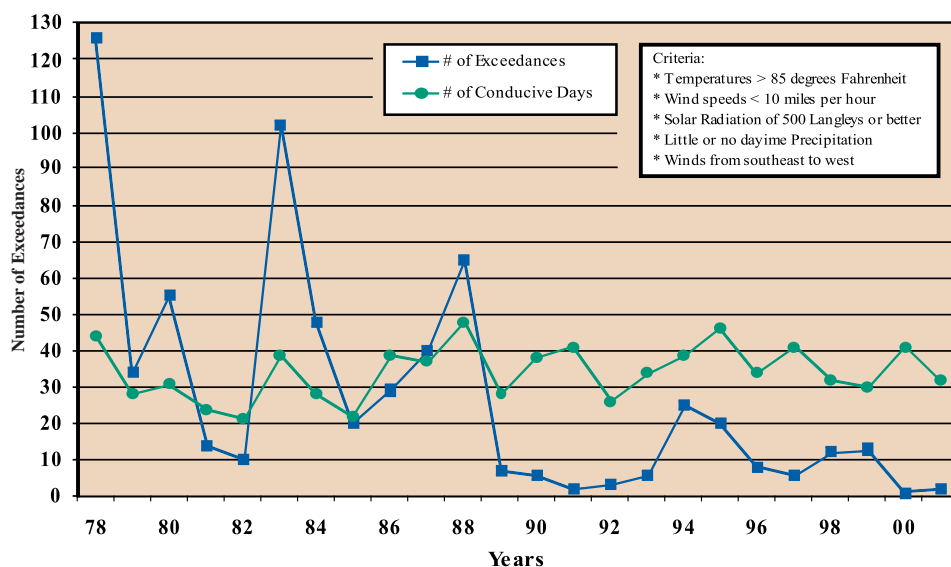


Exceedance: An exceedance occurs when levels of a certain pollutant are higher than those deemed safe by the federal government.

Violation: Four or more exceedances at the same air quality monitor in a three-year period equal a violation of the one hour standard.

Nonattainment: An area that has had a violation is classified as “nonattainment.” Nonattainment areas are then divided into five categories: marginal, moderate, serious, severe and extreme.

St. Louis Nonattainment Area 1-Hour Ozone 1978 - 2001 Number of Exceedances vs. Conducive Days



CONTROLLING ST. LOUIS OZONE

Missouri's State Implementation Plan (SIP) for the St. Louis ozone nonattainment area includes control measures and schedules for compliance with the Clean Air Act in order to attain the federal health-based standard for ground-level ozone. To reduce ozone

concentrations to safe levels, the state must control both industrial and mobile sources of volatile organic compounds (VOC) and nitrogen oxides (NO_x). Cars, trucks and buses are examples of mobile sources of VOCs. Major control measures benefiting St. Louis recently included a vehicle emissions inspection and maintenance program, Stage II vapor recovery systems for gasoline refueling, advanced emissions control systems for industrial sources and controls on

Number of Days with Excessive Ozone - St. Louis Nonattainment Area

Number of One-Hour Exceedances

Site	Address	91	92	93	94	95	96	97	98	99	00	01
St. Louis	Missouri											
Arnold	Arnold and Tenbrook	0	0	0	2	2	1	1	1	1	0	0
West Alton	Highway 94	0	0	0	4	4	1	1	2	3	1	1
Orchard Farm						2	1	0	1	2	0	0
St. Louis	8227 S. Broadway	0	0	0	0	0	1	0	1	0	0	0
St. Louis	1122 Clark and Tucker	0	0	0	0	0	0	0	1	1	0	0
St. Louis	Newstead & Cote Brillante	0	0	0	0	1	0	0	0	0		
St. Louis	Margaretta										0	0
Affton	South Lindbergh	1	2	2	2	0	1	1	1	0	0	0
Queeny Park	305 Weidman	0	0	0	5	1	0	0	1	1	0	0
Clayton	55 Hunter Avenue	0	1	0	3	0	0	0	1	1	0	0
Ferguson	3400 Pershall Road	0	0	0	2	1	0	1	1	1	0	0
St. Ann	10267 St. Charles Rock Road	0	0	0	4	1	0	0	1	1	0	
Breckenridge	9630 St. Charles Rock Road											0
	Illinois	91	92	93	94	95	96	97	98	99	00	01
Alton	409 Main Street	0	0	2	1	1	2	0	0	1	0	0
Maryville	200 West Division	0	0	1	1	1	0	0	0	0	0	0
Edwardsville	Poag Road	1	0	0	0	3	0	1	0	0	0	0
Wood River	54 North Walcott	0	0	0	1	2	1	1	0	1	0	1
East St. Louis	13th and Tudor	0	0	1	0	1	0	0	1	0	0	0
St. Louis Nonattainment Total		2	3	6	25	20	8	6	12	13	1	2

Number of Days with Excessive Ozone

St. Louis exceeded the **ozone** standard each summer between 1996 and 2001. The table above shows the number of days that sites in Missouri and Illinois reported exceeding the **ozone** standard. The St. Louis **ozone nonattainment area** reported two **exceedances** of the one-hour standard during the 2001 **ozone** season (April 1 through October 31).

NO_x emissions from utility boilers. The two control strategies leading to the greatest reductions in VOC emissions are enhanced vehicle inspection and maintenance and the use of reformulated gasoline.

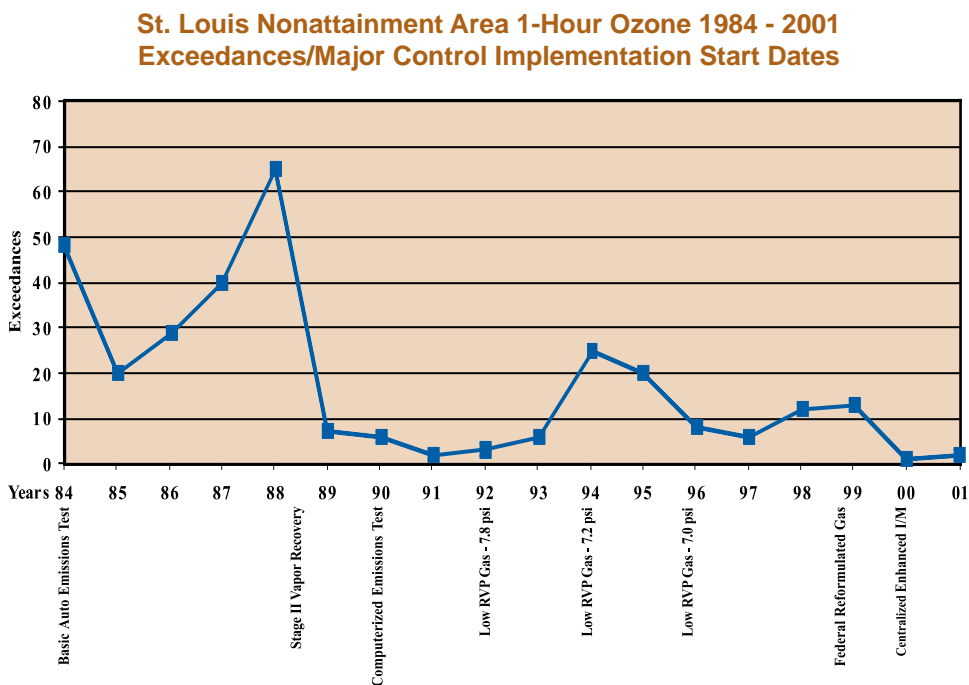
Conformity Analysis/ Determination

In accordance with the 1990 Clean Air Act - section 176(c), all transportation plans, programs and projects are required to conform to air quality plans for transportation-related pollutants in **nonattainment** and maintenance areas. The air quality conformity analysis/determination is the Clean Air Act requirement that calls for EPA, the United States Department of Transportation and various Missouri and Illinois state, regional and local government agencies to integrate the air quality and transportation planning development process. Transportation conformity supports the development of transportation plans, programs and projects that enable areas to meet and **maintain national air quality standards** for **ozone**, particulate matter and **carbon monoxide**, which impact human health and the environment.

The East-West Gateway Coordinating Council conducts and coordinates the air quality conformity analysis/determination for St. Louis in cooperation with EPA, the United States Department of Transportation and various Missouri and Illinois state, regional and local government agencies. Currently, the air quality conformity analysis/determination is performed on an annual basis.

Vehicle Emissions Inspections

Programs for vehicle emissions testing and repair, or Inspection and Maintenance (I/M) programs, are key mechanisms for controlling mobile source emissions in many urban regions nationwide. The Gateway Clean Air Program is an inspection



and maintenance program in the St. Louis **nonattainment** area implemented to control mobile source emissions. The Gateway Clean Air Program represents a large portion of the Department of Natural Resources' **state implementation plan** to bring St. Louis into compliance with the **National Ambient Air Quality Standards (NAAQS)** for **ozone**.

The Gateway Clean Air Program uses new emissions testing technologies. An enhanced emissions test simulates real driving conditions on a dynamometer (treadmill-like device) during testing. This measures specific pollutants from vehicles much more precisely than the older idle testing system. A second test, called RapidScreen, uses a remote sensing device to monitor exhaust emissions while vehicles are being driven on roads and highways. RapidScreen allows the very cleanest-running vehicles to pass the new emissions test without visiting emissions testing stations. An improved version of the idle test is used for vehicles manufactured from 1971 through 1980 and for vehicles tested in Franklin County.

The emission standards of the enhanced emissions testing procedure will become more stringent in 2002 according to state rule 10 CSR 10-5.380, "Motor Vehicle Emissions Inspection." Because the emission standards will be more stringent, more vehicles will need to be repaired in order to be registered in the **nonattainment** area. Therefore, the Gateway Clean Air Program will be more instrumental in bringing the St. Louis **nonattainment** area into **attainment**.

Due to federal rulemaking published by EPA in 2001, the Air Pollution Control Program has made preliminary plans to modify the emission test requirements for 1996 and newer model year vehicles. Beginning as early as January 2003, vehicles that are model year 1996 and newer will not be tested with either the new enhanced emissions testing procedure or the improved basic idle emissions test. Instead, these vehicles will only have the on-board diagnostics systems tested.

On-board diagnostics is a computerized system that monitors the vehicles' emissions control

components. A “check engine” or malfunction indicator (MIL) light turns on if the vehicle develops a problem. To check a vehicle’s on-board diagnostics, an inspector plugs a computer into the vehicle and generates a report on likely future emissions. Currently, the Gateway Clean Air Program checks 1996 and newer vehicles using on-board diagnostics and provides the report to motorists as an advisory only.

Additional information about the Gateway Clean Air Program is available by visiting the following Web sites: gatewaycleanair.com, www.dnr.state.mo.us/alpd/apcp/gcap/ or www.cleanair-stlouis.com/gcap/.

Low Reid Vapor Pressure Gasoline and Reformulated Gasoline

Since VOCs are a main component of **ozone**, many volatile organic compound (VOC) control measures have been used in the effort to reach **attainment** of the **ozone** standard. In 1994, low Reid vapor pressure (RVP) gasoline was implemented in St.

Louis. RVP is a measure of the volatility of gasoline or its tendency to evaporate into the air. Lowering RVP reduces evaporative emissions of gasoline. Between 1994 and 1998, a state regulation restricted the RVP of gasoline sold in the St. Louis **nonattainment area** during the warmest months of the year, June 1 through Sept. 15.

Federal **reformulated gasoline (RFG)** has been required at retail gasoline stations in the St. Louis **ozone nonattainment area** since June 1, 1999. **RFG** is a gasoline formula designed to burn cleaner than conventional gasoline, and to reduce both exhaust and evaporative emissions by adjusting the amounts of various components already found in conventional gasoline. **RFG** is administered and enforced by EPA. Phase II of the **RFG** program that began Jan. 1, 2000, requires additional emission reductions compared to Phase I **RFG**. Phase II **RFG** requires a minimum of 25 percent VOC reductions, a 20 percent reduction in air toxics and a five to seven percent reduction in **NO_x** emissions.

Number of Days with Excessive Ozone - Kansas City Ozone Maintenance Area

Number of One-Hour Exceedances

Site	Address	91	92	93	94	95	96	97	98	99	00	01
Kansas City	Missouri											
Liberty	Hwy 33 and County Hwy	0	0	1	0	3	0	1	2	0	0	0
Lawson	Watkins Mill State Park Road	0	0	0	0	3	0	0	1	0	0	0
Kansas City	49th and Winchester WOF	0	0	0	0	2	0	0	0	0	0	0
Kansas City	Richards Gebaur AFB	1	0	0	0	0	0	0	0	0		
Belton	203rd Street										1	0
Kansas City	11500 N. 71 Hwy KCI Airport	0	1	0	0	1	0	1	1	0	1	0
	Kansas	91	92	93	94	95	96	97	98	99	00	01
Wyandotte CO	Ann Avenue	0	0	1	0	0	1	0	1	0	0	0
Total		1	1	2	0	9	1	2	5	0	2	0

OZONE IN KANSAS CITY

The Kansas City Metropolitan area was designated as a sub-marginal ozone nonattainment area under the Clean Air Act Amendments of 1990. In 1992, the Kansas City area demonstrated compliance with the standard and was redesignated to attainment and renamed an ozone maintenance area. The Kansas City ozone maintenance area includes Clay, Jackson and Platte counties in Missouri as well as Johnson and Wyandotte counties in Kansas.

In 2001, Kansas City reported **no exceedances** of the one-hour **ozone** standard down from two **exceedances** in 2000. The table at the left shows the number of days each site reported exceeding the **ozone** standard between 1991 and 2001.

The states of Kansas and Missouri along with EPA conducted a monitoring network review during 2000. The review determined that two new monitoring sites should be installed. One site will be in north, central Clay County and the other in central Leavenworth County. The changes to the network should allow for better coverage during diverse meteorological conditions.

CONTROLLING KANSAS CITY OZONE

The Kansas City area has experienced ozone problems since the late 1970s. In response to the Clean Air Act Amendments of 1990, EPA published two regulations that reduced the Reid vapor pressure (RVP) of gasoline in the Kansas City area. From 1990 through 1997, RVP of gasoline in Kansas City has been reduced on three occasions. The latest change occurred during summer 2001. The Department of Natural Resources and

Kansas Department of Health and Environment required that 7.0 Reid Vapor Pressure gasoline be sold in the Kansas City Maintenance Area during the peak ozone season.

The Department of Natural Resources' Air Pollution Control Program developed an **ozone** control strategy after working with the Mid-America Regional Council (MARC), the Kansas Department of Health and Environment, Kansas City local agencies and industry representatives. This strategy was to be implemented in place of the contingency measures presented in the 1992 Kansas City **Ozone Maintenance State Implementation Plan**. The Department of Natural Resources presented this plan to the **Missouri Air Conservation Commission** in April 1997. The commission asked the Department of Natural Resources to remove inspection and maintenance from this plan and replace it with a more expeditious control program. After discussions with MARC and other community representatives, a control strategy including **reformulated gasoline (RFG)** was developed. The revised maintenance plan called for **RFG** to be sold in the Kansas City area starting in 2000. The **Missouri Air Conservation Commission** adopted the Maintenance Plan in February 1998. This plan required the Department of Natural Resources to recommend that the Governor of Missouri ask EPA to include the Kansas City area in the federal **RFG** program by April 2000.

RFG would have replaced low RVP gasoline as the fuel control strategy. The Department of Natural Resources and the Kansas Department of Health and Environment hosted a Fuels Summit in June 1999. This summit resulted in a recommendation to proceed with **RFG**. The governors of Kansas and Missouri opted into the **RFG** program at the end of July 1999. However, a lawsuit against EPA blocked the use of federal **RFG** in former **ozone nonattainment areas**, including Kansas City.

The petroleum interests offered to supply Kansas City with a 7.0 RVP gasoline beginning in 2001. Missouri and the state of Kansas implemented 7.0 RVP gasoline programs on June 1, 2001. Additionally, Missouri adopted new requirements for cold solvent cleaning, aerospace coatings, and Stage I vapor recovery systems. Cold cleaners are now required to use low vapor pressure solvents. A new rule controls VOC content of aerospace coatings. The Stage I Vapor Recovery program was amended to require enhanced reporting and record-keeping, increased inspection frequency and installation of pressure vacuum relief valves.

Conformity Analysis/ Determination

In accordance with the 1990 Clean Air Act - section 176(c), all transportation plans, programs and projects are required to conform to air quality plans for transportation-related pollutants in **nonattainment** and maintenance areas. The air quality conformity analysis/determination is the Clean Air Act requirement that calls for EPA, the United States Department of Transportation and various Missouri and Illinois state, regional and local government agencies to integrate the air quality and transportation planning development process. Transportation conformity supports the development of transportation plans, programs and projects that enable areas to meet and maintain national air quality standards for **ozone**, particulate matter and **carbon monoxide**, which impact human health and the environment.

The Mid-America Regional Council conducts and coordinates the air quality conformity analysis/determination for Kansas City in cooperation with the United States Environmental Protection Agency, the United States Department of Transportation and various Missouri and Kansas state, regional and local government agencies. Currently, the air quality conformity analysis/determination is performed on an annual basis.

Lead In Missouri

Low doses of lead can damage the central nervous system of infants and children, causing seizures, disabilities and behavior disorders. In children and adults, lead causes fatigue, disturbed sleep and decreased fitness. It damages the kidneys, liver and blood-forming organs. It is suspected of causing high blood pressure and heart disease. High levels damage the nervous system and cause seizures, comas and death. The National Ambient Air Quality Standards (NAAQS) are established EPA and limit the amount of certain pollutants allowed in outside air. These limits are based on what is safe for humans to breathe. The NAAQS standard for lead is set at 1.5 micrograms per cubic

meter averaged over a calendar quarter. The federal Clean Air Act Amendments of 1990 require states to bring all nonattainment areas into compliance with the lead standard. Lead emissions are reduced through control strategies and clean work practices. All methods of reducing lead emissions are included into the Missouri State Implementation Plan (SIP) for lead, making them enforceable.

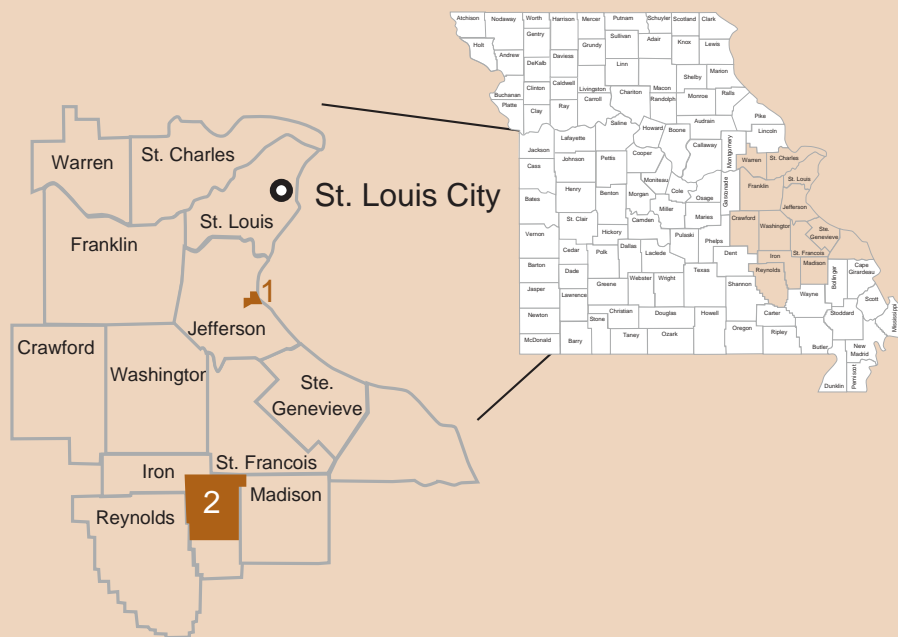
At the beginning of 2001, there were two areas designated as being in **nonattainment** for lead standards, Herculaneum and Glover. The Doe Run Company operates primary **lead smelters** within these areas.

Herculaneum Plan Approval

The Department of Natural Resources' Air Pollution Control Program revised the control strategy for the Herculaneum **lead SIP**. The department's Air Pollution Control Program presented this plan for public hearing on Oct. 26, 2000. The **Missouri Air Conservation Commission** adopted the plan Dec. 7, 2000. This plan was submitted to EPA on Jan. 9, 2001 and EPA determined that the plan submittal was complete on Jan. 18, 2001.

The plan involved the development of an emission inventory protocol, observation of emission testing, oversight and review of on-site meteorological data, development of a comprehensive hour-by-hour emission inventory, development and considerable refinements of a dispersion model, three rounds of receptor modeling and model reconciliation. The emission control

Lead Nonattainment Areas



Nonattainment Area

- | | | |
|---|-------------------------------|----------------------|
| 1 | City of Herculaneum..... | Doe Run, Herculaneum |
| 2 | Liberty/Arcadia Township..... | Doe Run, Glover |

Primary Lead Emitter

strategy involves enclosure of the main processes at the plant and the installation of building ventilation systems. The ventilation gases will be filtered by state-of-the-art, high-efficiency filtration systems. Capital costs are expected to be about \$12 million. Doe Run is required to install all of the emission controls by July 31, 2002.

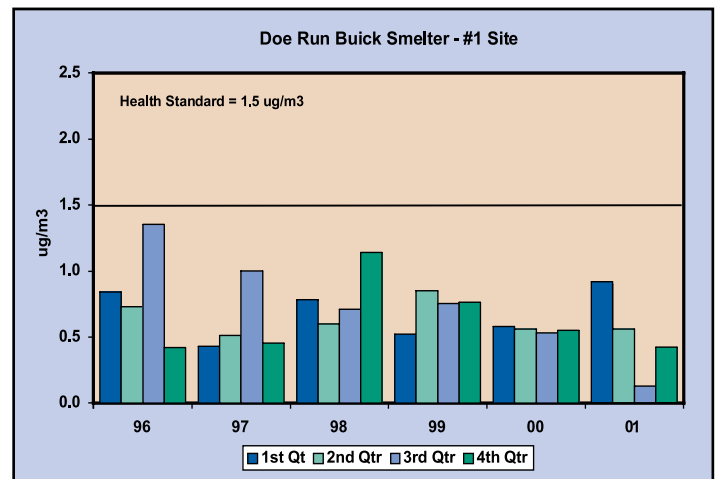
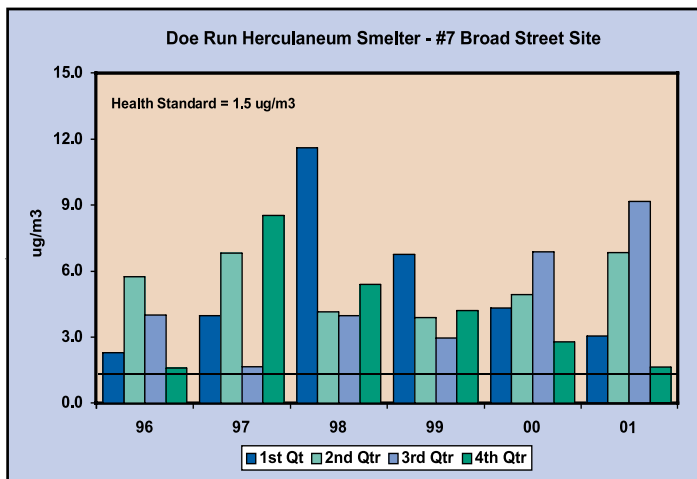
Air quality data for the area shows continued violations of the **lead NAAQS**, most notably at the Broad Street monitor. This monitor is located within a few hundred yards of the facility. Review of the monitoring shows that this monitor gives very high readings on days when the prevailing winds blow directly from the plant to the monitor.

In late August 2001, **lead**-bearing materials were discovered on the city streets of Herculaneum, along the route that Doe Run uses to haul concentrated ores into the plant. The contamination decreased with distance from the plant. This material likely fell off of the tires and tailgates of trucks as they left the plant. These ores may have become airborne as vehicles drove over it. The Department of Natural Resources ordered Doe Run to clean up the streets, and much of that work has been completed. The order also required Doe Run to inspect and clean the concentrate trucks before they left the plant. Additional air monitors were installed to measure any potential impact that the street dust might be having on residents.

The Department has kept the residents of Herculaneum informed through the use of direct mailings and Web site (<http://www.dnr.stat.mo.us/env/herc.htm>.) Many residents have voiced concerns about the truck traffic and concentrate hauling practices. The company is investigating other options for the delivery of concentrate to the facility.

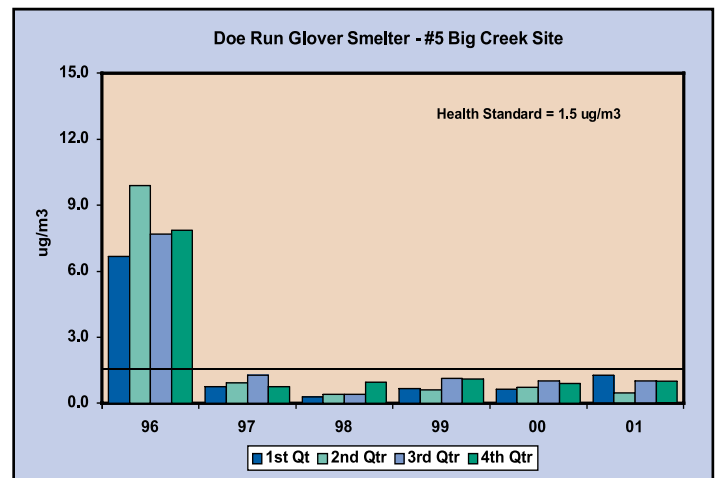
Glover Plan

Air monitors near the Doe Run-Glover **Smelter** have not shown a violation of the **NAAQS** since the **SIP** controls were installed on Dec. 31, 1996. The department held preliminary meetings with Glover to discuss re-designation of the area to **attainment**. A re-designation request for this area will be developed in 2002.



Average Quarterly Concentrations of Lead in Ambient Air Near Lead Smelters in Missouri

Since Missouri is the chief **lead**-mining district in the nation, with several **smelters**, the department conducts ambient monitoring for **lead**. Developed by EPA, the health standard for **lead** defines the maximum safe level for human exposure to this otherwise useful metal. The **National Ambient Air Quality Standard** for **lead** is 1.5 micrograms per cubic meter, averaged from all the monitor filters in one-quarter of the year. Currently, the **Herculaneum smelter** is the only one registering **exceedances** of the airborne **lead** standard.



Fine Particulate Matter

PM_{2.5} is primarily generated from combustion sources. It can be emitted directly as particulate, or it can be formed from gases that are emitted, which combine or condense in the atmosphere to make particles. In addition to the current ambient monitoring, the department plans to conduct sampling that could be analyzed for specific compounds or species of compounds. This would help determine what types of sources are most responsible for **PM_{2.5}** levels in different parts of the state.

The time schedule for the **PM_{2.5}** standard to be implemented and attained will take several years because a new monitoring system for this type of pollution must be created. Based on EPA guidance, Missouri has designed a network of 30 monitors. By the end of 1999, 20 monitoring sites were in operation. EPA will designate the area **attainment** by 2003 based on three years of data gathered since 1999.

1999 - 2001 PM_{2.5} Data Summary

24-hr Std = 65 $\mu\text{g}/\text{m}^3$, 98th percentile Annual Mean Std = 15.0 $\mu\text{g}/\text{m}^3$

St. Louis	Maximum			Minimum			Mean
	1999	2000	2001	1999	2000	2001	
West Alton	43.7	35.2	42.0	14.4	14.9	14.8	14.7
Margaretta	49.4	41.8	48.4	15.3	15.0	14.1	14.8
Blair Street	64.5	45.2	52.5	17.3*	16.4	15.2	16.3
South Broadway	-	42.3	52.5	-	15.8*	14.8	15.3
2nd & Mound	29.0	43.3	51.3	15.8*	16.0	15.4	15.7
Florissant Valley	46.9	37.7	36.1	14.6	14.3	13.4	14.1
Clayton	46.7	51.0	36.0	15.2	14.8	13.8	14.6
South Lindberg	-	-	28.1	-	-	12.1*	12.1
Arnold	46.5	34.8	36.8	15.2	14.7	14.5	14.8

Kansas City							
Liberty	28.9	32.8	32.1	11.2	11.1	12.2	11.5
North Kansas City	37.3	39.5	43.5	12.2	13.1	13.0	12.8
Sugar Creek	36.2	37.3	39.4	11.8	12.6	12.6	12.3
Locust	34.9	41.9	37.2	14.0	13.4	14.2	13.9
Plaza	-	40.4	35.8	-	11.3*	13.0	12.2
Richards-Gebaur	30.1	-	-	11.6	-	-	-
Belton	-	40.9	34.5	-	10.9	11.4	11.3

Outstate							
Eldorado Springs	31.2	37.3	26.5	11.3	11.5	11.6	11.5
Mark Twain	38.9	34.5	33.7	11.1	11.0	11.2	11.1
Ste. Genevieve	42.1	37.0	34.5	13.8	15.2	13.7	14.2
SMSU	35.0	42.7	31.2	12.2	12.3	12.2	12.2
St. Joseph	30.8	31.9	35.4	12.5	11.8	12.9	12.4
Carthage Stone	37.7	31.3	34.1	13.1	13.2	14.4	13.6
Mountain View	50.2	37.2	-	13.1	13.5	-	13.3
Belle	-	-	96.0	-	-	21.8*	21.8

* = less than one full year of data

Concentrated Animal Feeding Operations

Many residents who live near concentrated animal feeding operations (CAFOs) know first hand that odor can be a problem. In order to combat these odors, in March 1999, the Missouri Air Conservation Commission adopted an amendment to the odor rules due to the large number of complaints created by the odors. This amendment requires for the Department of Natural Resources' Air Pollution Control

Program to regulate the odor emissions from the very largest CAFOs.

As of July 30, 1999, Class IA CAFOs were required to submit an odor control plan to the Air Pollution Control Program. In this plan, the facility must describe the measures it would use to control odors. Each CAFO was required to submit its plan by July 1, 2000, and have implemented the strategies by Jan. 1, 2002. At the end of 2001, the department had approved an odor plan for one facility and was working with the other facilities to resolve their issues. After Jan. 1, 2002, the Air Pollution Control Program is to enforce the odor standard stated in the amended rule.

At the Dec. 6, 2001, **Missouri Air Conservation Commission** meeting concerns were presented regarding the enforcement of the olfactometry standard of the odor rules and its sensitivity to background odors. In light



of these concerns, the commission advised the Air Pollution Control Program not to issue violations using this standard of the rules until the program could look into ways to revise the standard to make it reasonable and enforceable. The program expects the revised rules to be effective early 2003.

The department is also continuously monitoring ambient air near large CAFOs. Hydrogen sulfide and ammonia concentrations are being monitored near CAFOs in Mercer and Sullivan counties. The Mercer County site began monitoring in 1999, and the Sullivan County site began monitoring in summer 2001.

As a result of the data collected from the Mercer County monitoring site, Premium Standard Farms and Continental Grain are installing permeable covers on many of their lagoons. High levels of hydrogen sulfide and ammonia have been recorded at this site over the past two years. These

covers will reduce the hydrogen sulfide values.

In addition to the two monitoring sites, the Air Pollution Control Program is collecting and analyzing air samples to further understand how to implement an olfactometry standard for CAFOs. This data should help the department amend the odor rules to make it enforceable and effective.

In November 2001, EPA finalized a consent agreement with Premium Standard Farms to reduce odors at its Missouri CAFOs. The consent agreement requires the reduction of hydrogen sulfide and ammonia emissions from wastewater treatment systems and land application. It also requires monitoring of the various compounds emitted from each facility. The company must also investigate ways to reduce air emissions from the barns.



Air Pollution Information on the Internet

There is a wealth of information about air quality issues on the Internet. You may find some of the following World Wide Web addresses helpful (addresses were correct at the date of this publication):

MISSOURI DEPARTMENT OF NATURAL RESOURCES

Air Pollution Control Program (www.dnr.state.mo.us/alpd/apcp)

Outreach and Assistance Center (www.dnr.state.mo.us/oac)

General Department Information (www.dnr.state.mo.us)

The complete Missouri Air Law
(www.moga.state.mo.us/statutes/c643.htm)

Department of Natural Resources - Air Quality
Monitoring(www.dnr.state.mo.us/alpd/esp/esp_aqm.htm)

Code of State Regulations (mosl.sos.state.mo.us/csr/csr.htm)

U.S. ENVIRONMENTAL PROTECTION AGENCY

EPA Region VII (Kansas City) (www.epa.gov/region07/)

Office of Air and Radiation (www.epa.gov/oar/)

Air Links - EPA Air Quality Publications (www.epa.gov/airlinks/)

OTHER AIR QUALITY ORGANIZATIONS:

St. Louis Regional Clean Air Partnership (www.cleanair-stlouis.com/)

Heartland Sky (Kansas City)
(www.marc.org/environment/heartsky.htm)

American Lung Association (www.lungusa.org/)

Air and Waste Management Association (www.awma.org/)

Missouri Department of Health (www.health.state.mo.us/)

DAILY AIR QUALITY FORECASTS:

Kansas City (www.marc.org/airquality/airqual.htm#skycast)

St. Louis (<http://www.cleanair-stlouis.com/index.html>)

About The Air Pollution Control Program

The mission of the Department of Natural Resources' Air Pollution Control Program is "to maintain purity of the air resources of the state to protect the health, general welfare and physical property of the people, maximum employment and the full industrial development of the state." The program serves the public with technology, planning, enforcement, permitting, financial and information services to achieve this mission.

Technical Support

The program's staff analyzes the quality of the air in Missouri using chemistry, meteorology, mathematics and computer modeling. Staff members research the sources and effects of air pollution, collecting and maintaining an annual inventory of sources that emit air pollution. In conjunction with the Department of Natural Resources' Environmental Services Program and four local agencies, the department's Air Pollution Control Program staff designs and coordinates an air-monitoring network and analyzes monitoring data. The network provides air quality data from more than 40 locations around the state. Using the monitoring data and other data on source emissions and the weather, the staff runs computer models of the atmosphere to predict air quality.

Planning

The program's staff develops rules and plans designed to protect and improve Missouri's air quality. Public participation is a vital part of the cooperative process of developing

guidelines and regulations. The staff works with businesses, federal, state and local government agencies, environmental groups and the public to exchange ideas and information on clean air issues with advisory groups, workgroups and workshops.

The program's staff works closely with EPA as part of the national effort to improve air quality through the Clean Air Act. The staff research and analyze complex environmental issues to develop air pollution control strategies that will ensure Missouri's progress toward achieving and maintaining healthy air quality improvements. These air pollution control strategies are included in the **state implementation plan (SIP)** to control specific pollutants. The **Missouri Air Conservation Commission** (see p. xx) approves the **state implementation plan** and rule actions after they have gone through a public hearing process. Once rules are adopted by the **Missouri Air Conservation Commission**, they become effective through publication in the *Missouri State Code of Regulations*. The **state implementation plan** and associated rules adopted by the **Missouri Air Conservation Commission** are submitted to EPA for inclusion in the federally approved state plan.

Permits

The program's staff reviews construction permit applications of new or modified emission sources to ensure that facilities minimize the release of air contaminants and will meet the requirements of the state

and federal law and regulations. Operating permit applications, similar to business licenses, are also received and issued. Operating permits staff identifies all the air pollution control requirements of a source of air pollution.

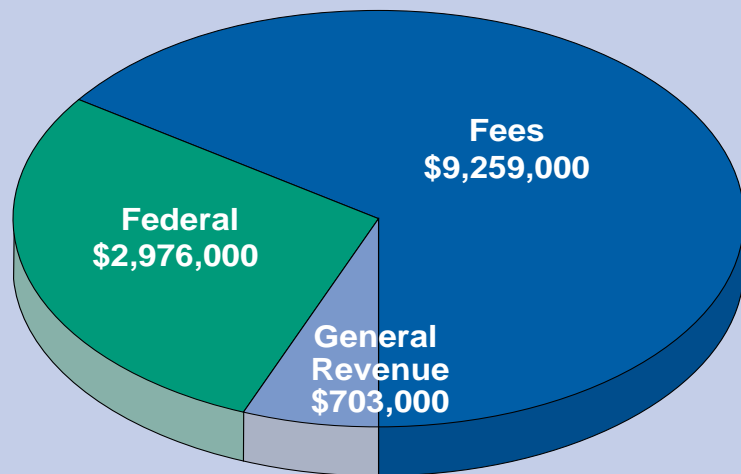
Enforcement

The program, through the department's regional offices, responds to complaints about air quality and help businesses comply with various federal, state and local rules. Staff conduct routine site inspections and oversees the testing of smokestacks, asbestos removal, gasoline vapor recovery equipment and other sources of air pollution. When a source violates an air quality requirement, the staff works with the facility to correct the problem and may take additional action, including the assessment of penalties necessary to obtain compliance with the requirement. Cases that cannot be resolved are referred to the Missouri Attorney General's office through the **Missouri Air Conservation Commission**.

Administration

The program's staff provides budgeting, procurement, public information and personnel services. The staff also provides liaisons for the **Missouri Air Conservation Commission**, EPA, the Missouri Department of Health, local air agencies in Kansas City, St. Louis, St. Louis County and Springfield, the American Lung Association and the news media.

2001 Revenue by Source



Total: \$12,938,000

2001 Revenue by Source

The department's Air Pollution Control Program receives funds from three sources: general tax revenue approved by the Missouri General Assembly, federal funds from EPA and four types of fees collected by the program. Since 1972, the program has collected fees from businesses seeking permits to build new or modify existing emission sources. Since 1984, the state has collected a fee to test the emissions of 1.2 million motor vehicles in the city of St. Louis and in Franklin, Jefferson, St. Charles and St. Louis counties. In 2000, an enhanced inspection program was initiated in all of these counties except Franklin, which still uses the basic test. Since 1993, the program has collected an emission fee from air pollution sources under the Missouri Air Conservation Law. Since 1989, the

program has collected fees to ensure the safe removal of asbestos, a cancer-causing substance of combined materials once used to insulate buildings. Funds received by the program are shown in the table above.

Local Agencies

A city or county may have its own air agency under two conditions: the city must be able to enforce its rules and its rules must be as strict as the state's. Local agencies issue permits, maintain their own monitoring networks and may enforce asbestos-removal laws. The local agencies are partially funded by EPA through the Department of Natural Resources. Four local governments in Missouri practice regional control over air pollution: Kansas City, St. Louis, St. Louis County and Springfield.

Missouri Air Conservation Commission

Created by the Missouri General Assembly in 1965, the Missouri Air Conservation Commission has seven members appointed by the governor. The commission's responsibility is to carry out the requirements of the Missouri Air Conservation Law, Chapter 643, Revised Statutes of Missouri. The primary duty of the commission is to achieve and maintain the National Ambient Air Quality Standards established by EPA. When the quality of the air meets these standards, an area is said to be in attainment. If an area does not meet the standards for a pollutant, however, the area is a nonattainment area for that pollutant.

Members serve four-year terms and the commission meets at least nine times per year. All meetings are open to the public and comments are welcome. Most meetings include public hearings where rule actions, **state implementation plans** and other matters are heard.

At meetings, the commission adopts, amends and rescinds rules. They hear appeals of enforcement orders and permit conditions and initiate legal action to enforce the rules. The commission assigns duties to local air pollution control agencies. They classify Missouri regions as **attainment** or **nonattainment areas** and approve plans to meet national standards in **nonattainment areas**.

Notices of public hearings are published in the public-notice sections of these newspapers: *Columbia Daily Tribune*, *Kansas City Star*, *Kirksville Daily Express*, *Poplar Bluff Daily American Republic*, *Springfield News Leader*, *St. Joseph News Press* and *St. Louis Post-Dispatch*. They are also published in the *Missouri Register*. To be placed on a mailing list to receive notice of public hearings and meetings, you may contact the Department of Natural Resources' Air Pollution Control Program at (573) 751-4817.

Information on public hearings and **Missouri Air Conservation Commission** meetings is also available on our home page at www.dnr.state.mo.us/alpd/apcp.



Bob Holden

Governor

State of Missouri

2001 Missouri Air Conservation Commission

Michael Foresman

Chair

Harriet Beard

Vice-chair

Frank Beller

Ernie Brown

Joanne Collins

Andy Farmer

Barry Kayes

Steve Mahfood

Director

Department of Natural Resources

John Young

Director

Department of Natural Resources'
Air and Land Protection Division

Roger D. Randolph

Director

Department of Natural Resources'
Air Pollution Control Program

Left to Right: Andy Farmer, Joanne Collins, Ernie Brown, Harriet Beard, Frank Beller and Barry Kayes (Not Pictured: Michael Foresman)

Down the Road

Regional Haze: EPA recently finalized a rule to improve visibility in the Class I Wilderness Areas of the United States. There are two Class I areas in Missouri: Hercules Glade Wilderness Area in Taney County and Mingo Wilderness Area in Stoddard and Wayne counties.

The pollutants that obscure visibility are called “haze.” Some pollutants that contribute to haze, mostly fine particles, are directly emitted to the atmosphere by a variety of sources including electric power generation, industry, mobile sources, agricultural burning and forestry burning. In Missouri, sulfate, a byproduct of fossil fuel combustion, is likely to be a dominant source of visibility impairment.

Improvements in visibility are expected to occur with the goal of reducing haze in the Class I areas to natural background conditions in 60 years. The photograph on this page reflects the air quality differences at Hercules Glade on good and poor air quality days.

Developing a plan to identify and control sources that contribute to regional haze will be one of the major activities of the Air Program over the next few years. Since these pollutants can be transported great distances by the atmosphere, Missouri has joined the Central States Regional Air Planning Association (CENRAP). CENRAP is an organization of states, tribes, federal agencies and other interested parties that is studying haze and visibility issues and working together to develop strategies to address them. The organization includes the states and tribal areas of Nebraska, Kansas, Oklahoma, Texas, Minnesota, Iowa, Missouri, Arkansas and Louisiana.

Hercules Glade Wilderness Area
Photographs provided by David A. Castillon, Ph.D., Geomorphologist.

2001 Rules Update

In 2001, the Missouri Air Conservation Commission adopted 10 rule actions. A complete list of rules is available at mosl.sos.state.mo.us/csr/csr.htm. The following is a list of the rules adopted in 2001:

10 CSR 10-2.215 Control of Emissions from Solvent Cleanup Operations

This new rule adopted regulatory language to reduce solvent emissions from solvent cleaning operations in the Kansas City metropolitan area. This rule allows the greater Kansas City area to comply with the volatile organic compound emission requirements in the **State Implementation Plan**.

10 CSR 10-2.330 Control of Gasoline Reid Vapor Pressure

This rule amendment incorporated regulatory language to further reduce evaporative emissions of volatile organic compounds (VOC) from the use of gasoline in the Kansas City **Ozone** maintenance area. This rule amendment assists Kansas City in complying with the VOC reduction requirements in the **State Implementation Plan**.

10 CSR 10-6.040 Reference Methods

This rule amendment updated test methods used to determine concentrations of hydrogen sulfide, sulfuric acid and sulfur.

10 CSR 10-6.200 Hospital, Medical, Infectious Waste Incinerators

This rule amendment revised definitions of co-fired combustor and medical/infectious waste to be consistent with federal definitions.

10 CSR 10-2.260 Control of Petroleum Liquid Storage, Loading and Transfer

This rule amendment requires delivery vessels to meet testing requirements using the federal standard specified in CFR Part 63.425(e) instead of state-specific testing requirements. The federal requirements are very similar to the state requirements and do not impose an additional regulatory burden on the affected industry. This action makes the Kansas City tank truck tightness test

requirements consistent with those in St. Louis. In addition, this rule amendment requires California Air Resources Board certified pressure/vacuum valves to be installed on gasoline storage tanks larger than 2,000 gallons as part of the Kansas City **Ozone** Maintenance Plan.

10 CSR 10-6.400 Restriction of Emission of Particulate Matter from Industrial Processes

This rule amendment revised regulatory language to address comments received when the original four area specific rules were rescinded as a result of being consolidated into this new rule.

10 CSR 10-2.210 Control of Emissions from Solvent Metal Cleaning

This rule amendment required specific vapor pressure limits on solvents used in cold cleaning operations to reduce the rate of evaporation of cold cleaning solvents to the atmosphere. This action is part of the Kansas City **Ozone** Maintenance Plan.

10 CSR 10-6.110 Submission of Emission Data, Emission Fees and Process Information

This rule amendment established emission and service fees for Missouri facilities as required annually by 643.070 and 643.079, RSMo.

10 CSR 10-6.050 Start-Up, Shutdown and Malfunction Conditions

This rule amendment adopted regulatory language to clarify what constitutes a malfunction, start-up or shutdown condition. It also determines the reporting requirements for each condition.

10 CSR 10-6.280 Compliance Monitoring Usage

This rule amendment corrected the monitoring method reference in the rule language.

State Implementation Plan/ Air Quality Plans

The department's Air Pollution Control Program submits rules to the **Missouri Air Conservation Commission** and writes the **State Implementation Plan (SIP)** and air quality plans that indicate how Missouri will achieve and maintain the federal standards for **ozone** and other pollutants.

The **SIP** is the primary method for achieving the **National Ambient Air Quality Standards** for compliance with the Clean Air Act. Distinct air quality plans are developed for specific air pollutants. Whenever concentrations of one of these pollutants exceed federal standards, a plan is developed to bring the area into compliance. Plan development includes a new inventory of emission levels, computer modeling of emissions' sources and the effects of emission sources, control strategies and regulatory requirements or rules.

Another type of air quality plan, called a **State Implementation Plan**, also involves an emission inventory, controls and rules, but addresses emission source types as well as specific pollutants.

The **Missouri Air Conservation Commission** adopted the following three plan actions in 2001:

St. Louis Attainment Demonstration Plan – St. Louis *

This plan action came as the result of an Aug. 30, 2000, U.S. Court of Appeals decision extending the compliance date for the Oxides of Nitrogen **SIP** call from 2003 to 2004. Because this action could have changed the proposed **attainment** date extension for St. Louis from 2003 to 2004, the department performed an analysis at the request of the U.S. Environmental Protection Agency to evaluate the potential impact of this action on the **Attainment** Demonstration. The analysis indicated that St. Louis would be able to attain the one-hour **ozone** standard in 2004. The MACC adopted this plan action on Feb. 26, 2001 during a special telephone conference meeting.

St. Joseph Light & Power SO₂ Attainment Plan – St. Joseph *

This plan action established a consent agreement between the St. Joseph Light & Power Company and Missouri to avoid a SO₂ **nonattainment** designation. MACC adopted the plan on March 29, 2001. All parties to the agreement have signed it.

Springfield City Utilities SO₂ Consent Agreement – Springfield *

This plan action established a SO₂ control strategy. All parties have signed the control strategy except the U.S. Court of Appeals. MACC adopted the control strategy Dec. 6, 2001. The strategy will be presented to the Court for final execution.

*These plans are part of the Missouri **State Implementation Plan**.

Air Quality Information

MISSOURI DEPARTMENT OF NATURAL RESOURCES

Air Pollution Control Program(573) 751-4817

P.O. Box 176 Jefferson City, MO 65102-0176

General Department of Natural Resources Information1-800-361-4827

Relay Missouri (for use by the hearing impaired)1-800-735-2966

Jefferson City Regional Office(573) 751-2729

Kansas City Regional Office(816) 622-7000

Northeast Regional Office (Macon)(660) 385-2129

St. Louis Regional Office(314) 301-7600

Southeast Regional Office (Poplar Bluff)(573) 840-9750

Southwest Regional Office (Springfield)(417) 891-4300

IN CASE OF AN ENVIRONMENTAL EMERGENCY:

Missouri Department of Natural Resources

Emergencies only 24 hours a day(573) 634-2436

Emergency Response Office weekdays(573) 526-3315

U.S. Environmental Protection Agency - Region 7(913) 551-7020

National Response Center (A service of the U.S. government for reporting oil and chemical spills)1-800-424-8802

CHEMTREC (A service of the chemical industry for reporting chemical spills, leaks and fires)1-800-424-9300

OTHER AIR QUALITY ORGANIZATIONS:

Missouri Department of Health(573) 751-6400

St. Louis Regional Clean Air Partnership(314) 645-5505

Heartland Sky (Kansas City)(816)-474-4240

American Lung Association of Eastern Missouri(314) 645-5505

American Lung Association of Western Missouri(816) 842-5242

Kansas City Health Department(816) 513-6314

City of St. Louis - Division of Air Pollution Control(314) 613-7300

St. Louis County - Department of Health(314) 615-8923

Springfield-Greene County - Air Pollution Control Authority(417) 864-1662

GLOSSARY

Attainment: The designation given to an area that meets all National Ambient Air Quality Standards.

Carbon monoxide (CO): A poisonous gas that is odorless, colorless and tasteless. At low levels it causes impaired vision and manual dexterity, weakness and mental dullness. At high levels it may cause vomiting, fast pulse and breathing followed by a slow pulse and breathing, then collapse and unconsciousness.

Exceedance: An exceedance occurs when levels of a certain pollutant are higher than those deemed safe by the federal government.

Inhalable particles (PM₁₀ and PM_{2.5}): A broad class of particles sometimes simply referred to as “soot.” One of the “criteria pollutants,” PM₁₀ particles are 10 microns or smaller in diameter. The pollutant increases the likelihood of chronic or acute respiratory illness. It also causes difficulty in breathing, aggravation of existing respiratory or cardiovascular illness and lung damage. In addition it causes decreased ability to defend against foreign materials. New laws have been passed regulating PM_{2.5}, an even smaller and more harmful class of fine particles less than 2.5 microns in diameter. Missouri is beginning to monitor its concentrations.

Lead (Pb): Airborne lead appears as dust-like particles ranging from light gray to black. Low doses may damage the central nervous system of fetuses and children, causing seizures, mental retardation and behavioral disorders. In children and adults, lead causes fatigue, disturbed sleep and leads to decreased fitness, and it damages the kidneys, liver and blood-forming organs. It is suspected of causing high blood pressure and heart disease. High levels damage the nervous system and cause seizures, comas and death.

Missouri Air Conservation Commission: The governor appoints this seven-member group. The commission carries out the Missouri Air Conservation Law, Chapter 643, Revised Statutes of Missouri. The primary duty of the commission is to help Missouri achieve the National Ambient Air Quality Standards set by the U.S. Environmental Protection Agency.

National Ambient Air Quality Standards (NAAQS): Standards set by the U.S. Environmental Protection Agency that limit the amount of six air pollutants allowed in outside air. These six are carbon monoxide, inhalable particles, lead, nitrogen dioxide, ozone and sulfur dioxide. The limits are based on what is safe for humans to breathe.

Nitrogen dioxide (NO₂): A poisonous, reddish-brown to dark brown gas with an irritating odor. It can cause lung inflammation and can lower resistance to infections like bronchitis and pneumonia. It is suspected of causing acute respiratory disease in children.

Nonattainment area: A region in which air monitors detect more of a pollutant than is allowed by the National Ambient Air Quality Standards set by the U.S. Environmental Protection Agency. The U.S. Environmental Protection Agency may designate a region as a “nonattainment area” for that pollutant.

Ozone (O₃): Three atoms of oxygen; a colorless gas with a pleasant odor at low concentrations. The layer of ozone in the atmosphere protects the earth from the sun’s harmful rays. Ground-level ozone is a summertime hazard produced when hydrocarbons from car exhaust and other fumes mix in the presence of sunlight with oxides of nitrogen from power plants and other sources. Ozone is more easily recognized in smog, a transparent summer haze that hangs over urban areas. The result is a gas that aggravates respiratory illness, makes breathing difficult and damages breathing tissues. Victims include people with lung disease, the elderly, children and adults who exercise outside.

Ozone Violation: Four or more exceedances of the federal ozone standard occurring in a three-year period at the same monitoring site.

Reformulated Gasoline (RFG): A fuel blend designed to reduce air toxins and volatile organic compound (VOC) emissions by decreasing the amount of toxic compounds such as benzene, lowering the evaporation rate and increasing the amount of oxygenate blended with the fuel.

Smelter: A facility that uses chemical and physical processes to turn metallic ores (such as lead sulfide concentrates) into sellable pure metal and alloy products.

State Implementation Plan (SIP): A plan submitted by the Missouri Department of Natural Resources to the Environmental Protection Agency for complying with national air quality standards. Each plan concerns one air pollutant for one nonattainment area.

Sulfur Dioxide (SO₂): A colorless gas with a strong, suffocating odor. Causes irritation of the throat and lungs and difficulty in breathing. It also causes aggravation of existing respiratory or cardiovascular illness.